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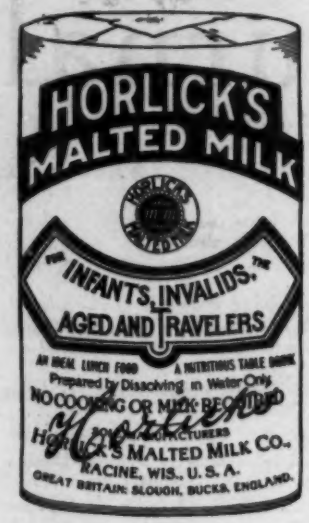

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VOL. XXIX CHICAGO, ILL., JANUARY, 1916 NO. 1

Original Articles

CLINICAL SYMPTOMS AND PHYSICAL SIGNS IN THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS: A DISCUSSION FROM THE STANDPOINT OF THEIR ETIOLOGY AND THEIR RELATIONSHIP TO EACH OTHER.*

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MONROVIA, CAL.

Mr. President, Ladies and Gentlemen: I wish to thank your worthy president for the privilege and honor of addressing the members of the Robert Koch Society today. I have chosen as my theme the clinical symptoms and physical signs in the early diagnosis of tuberculosis and shall discuss them from the standpoint of their etiology and their relationship to one another.

In studying the clinical history and symptom-complex of pulmonary tuberculosis, every one must have been more or less impressed with the indefiniteness of the symptoms and signs connected with this disease. It is my purpose today to try and bring some order out of this chaos.

There are some twenty-five or thirty different symptoms which accompany early tuberculosis, and even more in advanced tuberculosis; and, if we think of each symptom as an individual entity, there is no end of confusion. By carefully studying these various symptoms I have found that they all belong to three groups, according to their etiology, and I offer this classification to you today. I published this first some two years ago[1] but I can even see more clearly than I did at that time, the great value of this etiological study, and I trust that this classification may be of great value to you who are working so closely in the early diagnosis of this disease.

The classification which I offer is as follows: 1, those due to toxemia; 2, those due to reflex action; and, 3, those due to the tuberculous process *per se:*

Group 1.—Toxemia.

- Malaise
- Lack of endurance
- Loss of strength
- Lack of appetite
- Nervous instability
- Digestive disturbances
- Loss of weight
- Rapid pulse
- Night sweats
- Temperature
- Anemia.

Group 2.—Reflex Origin.

- Hoarseness
- Tickling in larynx
- Cough
- Digestive disturbances
- Loss of weight
- Circulatory disturbances
- Chest and shoulder pains
- Flushing of face
- Apparent anemia.

Group 3.—Tuberculous Involvement *per se*

- Frequent and protracted colds
- Spitting of blood
- Pleurisy
- Sputum
- Temperature.

It is characteristic of the symptoms of early tuberculosis that they are inconstant. We do not find any single symptom or any particular group of symptoms present under all circumstances. The explanation of this fact is plain when we study the symptoms according to their respective groupings.

The symptoms which are best known fall in group 1—those due to toxemia. It will be noticed

*Read before the Robert Koch Society, Chicago, Ill., Oct. 18, 1915, by invitation.

that these are wide spread in their expression, involving many different organs and parts. Aside from the anemia and rise of temperature, these all point to a disturbance on the part of the sympathetic nervous system. Further observation will show that this group of symptoms is present only under three conditions; first, during periods when the disease is definitely active and toxins are being thrown into the blood stream; and, second, when the disease is not particularly active but auto-inoculation is causing toxemia to be kept up by over-exertion, wrong habits of living; and, when the sympathetic nervous system is stimulated by certain depressive emotional states, as discouragement and anxiety, brought on by the disease.

The fact that the symptoms due to toxemia may be caused by any toxic condition whether it be a tonsillar focus or a general intestinal toxemia, or toxins from an acute infectious disease, show that these symptoms of themselves cannot be relied upon in diagnosis and are only of value when considered in connection with other symptoms and signs. The further fact that distinctly active conditions in tuberculosis are not constant until the disease reaches a state which is rather widespread, shows that this group of symptoms cannot be relied upon for diagnosis.

In order to have a clear conception of the symptoms which attend early tuberculosis, we must conceive of it as being a chronic inflammatory condition caused by irritation due to bacilli implanted in the tissues and toxins liberated by them. We must further consider that this chronic inflammation remains in a semi-quiescent condition over prolonged periods of time and that only now and then do bacilli in some particular focus take upon themselves increased activity, multiply, cause necrosis, caseation of the tissues, and produce the general toxic symptoms which are recognized in diagnosis. The disease process is present just the same, however, as when the acute toxic symptoms are prominent. With this understanding of the pathology we can understand how unreliable symptoms in Group 1 are. Fortunately, however, these symptoms are rarely found alone and even when they have passed away some of the symptoms of the other groups, together with certain physical signs remain.

The particular characteristic of the symptoms in Group 2 is that they all point to organs and parts other than the lungs; but to organs and parts which are related to the lungs in their nerve supply. The lungs are innervated by the sympathetic and vagus branches of the autonomic nervous system, and an irritation producing inflammation in one branch of these systems is apt to express itself in reflex action in other branches of the same system; consequently, inflammation in the lung sends impulses centrally, which manifest themselves in reflex action in other organs and parts connected centrally with the fibres which supply the lung. In this way all symptoms found in Group 2 may be explained; thus, for example, hoarseness, tickling in the larynx, and cough are reflex through the pulmonary branches of the vagus and superior and inferior laryngeal nerves. The hoarseness may be due to reflex irritation of either the superior or inferior laryngeal nerve. When due to the superior laryngeal nerve the picture in the larynx is that of a relaxed cord. The superior laryngeal nerve furnishes sensation to the larynx and motor power to the crico-thyroid muscle, the contraction of which increases the tension of the cord. When this is irritated reflexly we note a general relaxation and interference with normal approximation, particularly of the central portions of the cords. When hoarseness is due to interference with the recurrent laryngeal, it shows itself often as an adductor paralysis, the cord of the affected side failing to approximate its fellow on the other side. Tickling in the larynx is a sensory reflex through the superior laryngeal. The tickling in the larynx is the sensory impulse which precedes cough. Indigestion and loss of weight and reflex symptoms on the part of the gastro-intestinal tract are varied. They depend considerably upon the individual. There are individuals as shown by Eppinger and Hesz[2] who naturally have an increased vagus tonus. There are others in whom the sympathetic tonus seems to predominate. The nature of the reflex symptoms on the part of the digestive tract in tuberculosis will depend considerably on the individual's relative vagus and sympathetic tonus. Here we have the inflammation in the lung sending impulses reflexly to the gastro-intestinal tract through both the vagus and the sympathetic. If the vagus tonus predominates, and it seems to do so in early tuberculosis for the most part, when the patient

is not toxic, he may have even a better appetite than normal. There also may be an ample supply of gastric and intestinal juices and the motility of the gastro-intestinal tract may be above normal. In fact, these patients often suffer from hyperchlorhydria and spastic constipation. On the other hand, if the sympathetic tonus is greater, these patients suffer from lack of appetite, deficiency of gastro-intestinal juices, a diminution of motility, a stasis of the intestinal contents and rapid heart action. Disturbances on the part of the heart follow the same line as just mentioned in connection with the reflex in the gastro-intestinal tract. In those patients in whom the vagus reflex predominates we may see, when the patient is at rest and free from toxemia or general sympathetic disturbances, a pulse rate normal, or even below normal. Owing to the fact that the equilibrium of the pulse is disturbed by reflex action through both the sympathetic and vagus, the pulse is decidedly unstable. While it may be normal, or below normal, while at rest, upon exertion it may become rapid; and, in fact, more rapid than would occur under normal conditions, and the normal is apt to be restored more slowly than in an individual who does not have this double reflex irritation. Where the sympathetic tonus predominates, the pulse rate is higher than normal. Thus, it can be seen that a rapid pulse must not be expected under all conditions in early tuberculosis. Instability is the factor—not rapidity. In observing many tuberculous patients, both in early and chronic quiescent or semi-quiescent tuberculosis, I have found a pulse rate in the sixties to be very common in that type where we would suspect a general increased vagus tonus from other symptoms.

Chest and shoulder pains which appear in tuberculosis are of reflex character and due to two distinct causes. First, we have the reflex sensory manifestations which appear for the most part in the third and fourth cervical, and the fourth dorsal zones. Reflex sensory pains in tuberculosis express themselves, for the most part, in the shoulder region, about the third interspace anteriorly, and in the region of the scapulæ. There is also another pain of reflex origin involving certain motor branches of the cervical nerves. This shows itself as an aching of the shoulders; and in some instances, in advanced tuberculosis, I have seen a definite inflammation of the brachial plexus resulting from this irritation.

Flushing of the face is a dilatation of the capillaries of the head and face produced reflexly through the stimulation of the sympathetic fibres which are given off from the second to fourth thoracic segments of the cord.

It might seem strange to speak of apparent anemia as being a symptom of pulmonary tuberculosis, but it has long been observed that many patients who suffer from early pulmonary tuberculosis appear pale but do not show the expected blood changes on examination. The tuberculous patient is like the patient of general enteroptotic build. He has a disturbance in the inspiratory act due, however, to a different cause from that of the ptotic individual. The ptotic individual has a naturally deficient action of the diaphragm and consequently a deficient inspiratory act. The tuberculous patient may have normally a full inspiratory act, or, he may be of the ptotic build and have a natural deficiency; but, aside from his condition in health, when he has an inflammation in the lung, there is a motor disturbance of the muscles of inspiration including the diaphragm which lessens the inspiratory act.

The diaphragm is the chief muscle of respiration. It receives its innervation through the phrenics which are given off from the third and fourth, and occasionally from the fourth and fifth cervical segments. These segments of the cord are in direct communication reflexly, through the rami communicantes, with the sympathetics which supply the lung; consequently we have motor disturbances in the diaphragm as well as in the other muscles of inspiration, which results in a deficient action and limited motion of the side of the chest involved. Inasmuch as the inspiratory act is one of the chief factors in pumping the blood from the systemic veins to the right heart, we have an interference with this important function, consequently have less blood delivered to the right heart, and the heart has less blood to deliver to the arteries. The heart itself accustoms itself to a smaller content of blood and becomes smaller than normal as suggested by me in a former paper.[3] Resulting from these factors we have a disturbance in the general circulatory equilibrium and a relatively smaller amount of blood in the arteries, giving us a relative arterial anemia and a relatively large amount of blood stored up in the systemic veins,

particularly the splanchnics, giving us venous congestion.

In early tuberculosis the congestion does not manifest itself so much because the vessels are capable of a considerable amount of compensation; but, in late tuberculosis, this becomes quite evident. It will thus be seen that the symptoms of Group 2 of reflex origin, are much like the symptoms of Group 1, which are due to toxemia, in that they are not distinctive of pulmonary tuberculosis. They do not point directly to the lung. Those in Group 1 point to a general sympathetic discharge, involving a great number of organs supplied by this system. Those in Group 2 point to individual organs or parts which are bound reflexly with branches of the sympathetic and vagus nerves, and produce symptoms indicative of some particular organ in which now vagus tonus and again sympathetic tonus predominates.

The first group of symptoms is only present during toxemia or during depressive emotional states in this disease, which are manifested by fear, anxiety and discouragement; while the others may be present as long as the inflammation in the lung is not thoroughly quiescent—as long as irritation of either the sympathetic or vagus nerve endings in the lung may exist. Those of Group 1 are most prominent during attacks of acute inflammation and are kept up by wrong methods of living, and the depressive emotional states. They are also widespread, involving a great portion, if not all, of the organs supplied by the sympathetic nervous system.

Those symptoms of Group 2, however, are extremely variable. The reflex may express itself in one organ for a time, then in another organ and so on; but some of the symptoms belonging to this group are nearly always present. That the factor which is responsible for these reflex symptoms is present over long periods of time may be inferred from the persistence of such reflex signs as we note in the muscles. In early tuberculosis the neck and chest muscles which are involved in the reflex show this increased tonus continuously until healing occurs. We must assume that the reflex impulses which produce manifestations on the part of other organs are also continuous, but that, at times, the equilibrium is maintained and dysfunction does not appear.

If we take up the symptoms in Group 3 it will be noticed at once that these differ from Group 1 and 2 in one important particular. With the exception of temperature, they all point to the lung. When we have sufficient inflammation in the lung to produce a tuberculous bronchitis, it manifests itself, as a rule, in a cough which is not unlike acute bronchitis and hangs on for an uncertain time. In cold weather a bronchitis that hangs on for several weeks, or any bronchitis which is repeated at intervals, should be considered as suspicious. A bronchitis of this kind has nearly always associated with it the symptoms in Group 1 and some of the symptoms in Group 2. This should be sufficient, if properly correlated, to make the diagnosis of pulmonary tuberculosis extremely probable. These attacks of tuberculous bronchitis may not come often. They are like the exacerbations which produce toxic symptoms in this particular. They may be months apart, and sometimes years. Sometimes they show only as winter coughs, which continue winter after winter until a definite advanced tuberculosis manifests itself.

Spitting of blood may come on suddenly without any other symptoms being present. This occurs when bleeding is due to the rupture of a small vessel caused by an old quiescent focus of small dimensions. Under such conditions, however, if there is an extension of the disease following the spitting of blood, it will probably be followed by some of the symptoms in Group 2; and others in Group 1 will appear. The same may be said if symptoms of activity accompany the hemorrhage. The spitting of blood should always be considered as tuberculous unless some other cause can be definitely proven.

Pleurisy has a definite meaning. In a very large percentage of cases it is tuberculous. It further is evidence of an active tuberculosis. The profession must learn that tuberculosis of the pleura is as serious as tuberculosis of any other organ, with the exception that it is usually limited in extent and, if properly regarded, offers the patient a chance for cure. Tuberculous pleurisy is a metastasis from some other focus in the body which must be active or the metastasis could not occur; consequently *it should be treated seriously.* If the fact that there is an involvement in the pleura is not of sufficient consequence in the mind of the practitioner; that other fact, that this is an extension from some other focus which is

active or the extension could not occur, should be of sufficient consequence to cause this symptom to be treated seriously. This symptom itself should make a diagnosis unless it can be definitely proven that the pleurisy is due to some other cause. This applies to dry pleurisy, the same as to pleurisy with effusion. Symptoms of the other groups may not be present if the pleurisy is only of mild degree and limited in its extent. As a rule, however, symptoms in Group 1 will manifest themselves during this time and some of those in Group 2.

While sputum is not an early sign in tuberculosis, yet it is often present much earlier than we anticipate. Whenever the pathological process in the lung is sufficiently extensive and sufficiently virulent to cause an exudation in the tissues, there may be a slight amount of sputum present. At first this may be only mucus, but sooner or later, necrosis and caseation of small tubercles occur and bacilli may be found. Sputum should always be examined regardless of the patient's opinion as to its nature. It is not sufficient for the patient to say that he has no expectoration. Give the patient suffering from early tuberculosis a bottle and require him to bring for examination all the sputum raised in twenty-four hours, forty-eight hours or even seventy-two hours. This sputum should be treated not only according to the ordinary methods of examination, but either by antiformin or by fermentation and shaking. If this careful procedure is followed one will be surprised by often finding bacilli where unsuspected. The danger of basing a diagnosis upon the examination of a single sample of sputum in a patient with early tuberculosis can be understood if we realize that while the patient may expectorate six or eight times a day, he might not expectorate bacilli more than once in the entire twenty-four hours, or once in two or three days. The examination of a sample, unless bacilli are found, is worthless.

Where bacilli are not found the lymphocyte content should be noted. In tuberculous sputum there is often a high lymphocyte count. If 40 or 50 per cent. of lymphocytes should be found, it should be considered as suspicious. When lymphocytic or bacillary sputum is found some of the other symptoms are nearly always present.

A continued temperature was formerly thought to be tuberculous. This is not necessarily true. Any toxemia will produce temperature. Any inflammation will produce temperature and now that we know that infectious foci may be found in other parts of the body we must be very guarded in interpreting a slight rise of temperature as being due to tuberculosis.

Temperature must have other signs and symptoms accompanying it. Temperature in tuberculosis is extremely variable. It depends a great deal on whether the patient is at rest or active. The inflammation in tuberculosis is not constant, but goes in waves. There are waves of activity when the temperature will be a little higher than normal and waves of quiescence when it will be normal. No temperature curve in suspected tuberculosis is of any diagnostic value unless it extends over a period of several weeks. The temperature accompanying the menstrual period in women must be understood. For some time, anywhere from a few days to two weeks prior to the period time, the temperature is, as a rule, higher than the two weeks following the onset of the menses. It is not uncommon to find a temperature running from 98 degrees to 98.6 degrees for the two weeks following the period and running from 98.4 to 99 degrees during the two weeks preceding the period. This, however, shows great variation. Premenstrual rises may only appear a day or two before the onset of the period. In some women it is even slightly lower, but the period is followed by several days' rise.

We can see from the above discussion of the symptoms in tuberculosis that if they are properly analyzed, they give us diagnostic evidence; if not, they are confusing. By bearing in mind that they are produced by three different forces—toxemia, reflex action and the tuberculous process itself, we can understand them better and analyze them to greater advantage than we have been able to do with our hitherto indefinite ideas of their causation.

Now, if we take up the question of the physical signs, we shall see how intimately they are associated with the symptoms. For example, we often see a dilatation of the pupil on the side of the involvement. This dilatation of the pupil is inconstant. Some observers have reported that they have found it in about fifty per cent. of cases. It must be remembered that this was probably on a single examination of each patient, not a continuous observation. The pupil is in-

nervated by both the vagus and sympathetic fibres; the vagus has a tendency to contract—the sympathetic to dilate; consequently the equilibrium is disturbed. At times the patient may have a contracted pupil; again, he may have a normal pupil; and, still again, a dilated pupil. Dilatation of the pupil is extremely common if we observe patients repeatedly during various portions of the day over long periods of time. When we find dilatation of the pupil on one side, or abnormal dilatation on both sides, we think at once of reflex disturbance from the lung.

Other very important physical signs which I have described are those of motor and trophic disturbances in the muscles, subcutaneous tissue and skin over the chest. These disturbances in the skeletal muscles, subcutaneous tissue and skin overlying them, are due to reflex action.

The inflammation in the lung sends afferent impulses through the sympathetic and the rami communicantes to the cervical segments of the cord where they transfer their irritation to the cell bodies which give origin to filaments of the cervical nerves. This being the portion of the cord which provides motor, sensory, and trophic impulses for the superficial muscles of the neck and upper chest and the skin and subcutaneous tissue overlying them, also motor and trophic impulses for the diaphragm, we find an expression of the reflex in functional and structural changes in these structures.

In the case of the sterno-cleido-mastoideus and trapezius muscles we also have another reflex through the filaments of the *accesorius* running in the vagus. The reflexes manifested by these structures give us extremely important signs by which we may interpret the pathology within the chest. During periods of active inflammation in the lung and as long as the involvement in the lung has not healed, nerve endings are irritated, impulses travel centrally and continue their reflex irritation of nerve fibres which supply these superficial tissues. Consequently we have, in the presence of early active inflammation in the lung, a motor reflex manifesting itself in the superficial muscles as an increased tone (spasm). In the diaphragm it shows as altered motion. This increased tone in the superficial muscles may be determined sometimes on sight, but particularly on palpation. The muscles are firmer than normal; the individual fibres seem to have a definitely increased tone. It is shown in the diaphragm as limited motion of the side. Another element, of course, comes in to produce this sign—decreased elasticity of the pulmonary tissue itself. That this limited motion of the side can be caused by reflex disturbance on the part of the muscles of inspiration can be proven, however, by the fact that a very small lesion in the apex, where there is not sufficient disturbance on the part of the pulmonary elasticity to produce any appreciable effect, will be accompanied by limited motion.

When the disease has persisted for a long period of time, as it does in advanced tuberculosis, we have a reflex trophic disturbance in all the parts innervated—the muscles, subcutaneous tissue and skin. The muscles also suffer a degeneration from the fact that they are kept in constant tonus for a prolonged period (overwork atrophy); consequently, when we find a distinct degeneration of the muscles, subcutaneous tissue and the skin limited to the tissues covering one apex, or both apices, we should at once think of reflex action as being the etiological factor. When an inflammation has existed in the lung for a prolonged period of time as tuberculous infiltrations do, the skin is usually thinner than normal, the subcutaneous tissue is wasted, and when picked up between the thumb and finger, shows a diminution and distinct atrophy as compared with that over the other apex or over other parts of the chest wall. The muscles degenerate and present certain definite changes. They lose their elasticity and appear to the palpating finger more or less doughy. The bundles also are more easily detected than in normal muscles and give the impression of being stringy.

The importance of this localized atrophy, as indicating chronic inflammation in the lung, cannot be overestimated. If activity is also present; then, aside from the atrophy, a tendency for the muscles to show increased tonus may also be detected when carefully examined, although the general muscle tone is so low from the degeneration that this may be difficult to detect.

The diaphragm reflex may be detected as a limited motion of the side by either inspection or palpation. We sometimes find difficulty in distinguishing the motor and trophic disturbance in the muscles which are produced by reflex irritation from that produced by occupation. We have certain definite criteria, however, which will

aid us if we find increased tone of the muscles confined to one side, particularly the right side, in men who do heavy work. If this is due to occupation it is not so apt to involve the sterno-cleido-mastoideus as other muscles and will not involve the diaphragm; consequently, if we find increased tonus of the mucles, which would show this change by occupation, and also find the diaphragm reflex—lagging of the side—and increased tonus in the sterno-cleido-mastoideus, we should suspect it to be due to reflex action produced by inflammation in the lung. It will also be noted that there is some atrophy of the muscles on the right side of most chests due to occupational influences. Sometimes it is extremely confusing to tell whether this is wholly occupational or whether part of it is reflex as well. There are certain signs, however, which also aid in this dilemma. I would call attention to the fact that the sterno-cleido-mastoideus rarely degenerates from overwork. Nor does the subcutaneous tissue; consequently, if we find a degeneration of the sterno-cleido-mastoideus along with the other muscles and also find the subcutaneous tissue overlying the muscles atrophied, then we are justified in suspecting a degeneration due to pathological changes within the lung.

It is important to note that these reflexes are bound up and closely associated with the reflex symptoms found in Group 2. They are also accentuated at times when those symptoms in Group 1 are most prominent.

Physical signs which have long been employed in the diagnosis of intrapulmonary conditions are the lagging of the chest wall and the changes on percussion and auscultation. Lagging of the chest wall, as previously mentioned, is due to both reflex motor disturbances in the muscles of inspiration and lessened elasticity in the pulmonary tissue. To be sure, it is also produced by acute pleurisy and pleural adhesions, but this, as a rule, does not have so much to do with early tuberculosis.

The changes on percussion and auscultation are usually considered to be due wholly to a tuberculous process in the lung, but this is untrue. Some of our greatest errors and some of the things which have disturbed us most, in diagnosis, have been due to this assumption. A moment's thought will prove that we cannot neglect the influence of the superficial tissues on percussion and auscultation. When we see, as I have previously described, how these are altered in the presence of activity and chronic inflammation in the lung, it can readily be seen that this influence must be taken into consideration in interpreting our signs on percussion and ausculta- depends not only upon the involvement in the acter of the sound emitted by the percussion blow depends not only upon the involvement in the lung, but the involvement in the lung, plus the soft parts, bony thorax and all other conditions present in the chest; consequently, if, through a chronic inflammation, we have a degeneration which amounts to a wasting of any considerable portion of the soft tissues, this must be taken into consideration in our percussion findings. It is not at all uncommon to find one-third of the soft tissues covering an apex wasted through the reflex trophic disturbances caused by the chronic inflammation in the underlying lung. It would be necessary to have a very dense infiltration in that apex in order to make the percussion note equal in pitch to that on the normal side; or make the finger resistance equal to that on the normal side. The percussion note and resistance to the finger also depend on the tone of the muscle. If, as in early tuberculosis, we have an increased tonicity of the muscle, this, of itself, gives a higher pitched note and increased resistance as compared with the normal muscle; and a normal muscle will give higher pitch and increased resistance to the finger as compared with the degenerated muscle. I doubt not that every man who examines chests has been annoyed and perplexed very often because of his failure to recognize the effect of the soft tissues. It is impossible to compare the percussion findings in two parts of the chest or over symmetrical portions of the two lungs, without first taking into consideration the relative thickness and relative tonicity of the muscles and soft tissues over the different parts. This is extremely important in early tuberculosis.

One can readily understand how the auscultation findings are also influenced by the condition of the muscles. If one will listen over a degenerated muscle or a relaxed muscle, and then over the same muscle when in a state of tonicity, he will see that an impediment has been placed in the way of the conduction of sound through the muscles when in increased tone. He will also see that the sounds are higher pitched over muscles

with increased tone when compared with the normal.

To sum up, we can now understand that all the symptoms of tuberculosis are an expression of toxemia, reflex action, or of the disease process itself. The physical signs which accompany tuberculosis are also due to reflex action, and the tuberculous process itself. We can also see that the interpretation of the data obtained by the usual methods of examination, inspection, palpation, percussion and auscultation, cannot be correct unless we take into consideration not only the pathological process within the lung, but the changes which have occurred in all soft tissues covering the thorax. To be more exact, we must take into consideration the soft structures, the bony thorax, the infiltration in the lung and all other conditions which surround it.

In conclusion I trust that this analysis of the clinical symptoms and physical signs of tuberculosis may prove as valuable to you in your work as it has to me in mine, and I further trust that it may give you a clearer insight into this complex disease, and thus aid in the making of early diagnosis.

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THE INTRAVENOUS USE OF TYPHOID VACCINE AND FOREIGN PROTEIN IN THE TREATMENT OF TYPHOID FEVER.*

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The vaccine treatment of typhoid was first used by Fraenkel in 1893. He treated fifty-seven patients with vaccine prepared by growing the bacillus on thymus bouillon, killing at 63° C., and injecting subcutaneously; the dosage as regards number of bacteria is not given. He reported decided beneficial results and recommended its further use. His results, however, did not excite any special interest as nine years elapsed before the literature contains any further reference to the therapeutic use of typhoid vaccine. In 1902 Petruscky used a combination of typhoid vaccine and immune serum with favorable results. Another period of six years then passed by before any further clinical reports were published. Pescarolo and Quadrone in 1908 inoculated twenty typhoids subcutaneously with living attenuated organisms and again reported favorable results. From 1909 to the present time numerous reports appear in the literature with various typhoid vaccines given subcutaneously; the dose varying from 25,000,000 to 1,500,000,000, repeated every three to four days until 2 to 4 doses had been given. Krumbhaar and Richardson have collected from the literature 1806 cases so treated, with thirty-five of the thirty-nine authors reporting good results—the mortality being 5.4 per cent. With the exception of Petrowitch, satisfactory controls were not used. This author treated 460 cases with three doses of 20,000,000 each, using the Rawling's strain, and obtained a mortality of 3.2 per cent. With 220 controls the mortality was 8 per cent. This year Krumbhaar and Richardson report ninety-three cases, observed personally, and receiving subcutaneously in three doses a total of one billion or more, beginning usually with about 100,000,000, with a final dose of 1,000,000,000. The mortality was 7.5 per cent. and in 170 controls 8.2 per cent.; relapses in the treated occurred in 6.4 and in the untreated in 3.5; complications in the vaccinated 1.8 and in the controls 1.4 per cent. From these various statistics it is really difficult to draw conclusions. The death rate in typhoid is so variable that it would be difficult to say whether a mortality of 5.4 gave evidence of special therapeutic results. When we turn to the series of Krumbhaar and Richardson with controls, while they state the majority of cases were favorably affected by the vaccine, the mortality rate, frequency of relapses and complication, fail to support this conclusion. It can, therefore, be said that it is still to be proven whether subcutaneous use of vaccines in typhoid has actually lowered the mortality, the final test for the curative value of any therapeutic measure. There is, however, considerable evidence that the intensity and duration was lessened. Especially interesting in the light of the effect of intravenous typhoid vaccine was the occasional sudden drop of temperature to normal after a subcutaneous injection, this fall in temperature in a few instances being permanent. This observation was first made by Fraenkel in 1893, two or three of

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his series terminating in this manner. Recently Fistmantel treated fifty-two patients with subcutaneous injections, repeated every fourth day with increasing doses of vaccine, beginning with 100,000,000 and increasing to 400,000,000, and in 50 per cent. of the cases had a critical or rapid lytical fall in temperature. In seven cases after the lapse of a few days the fever reappeared; but in the remainder the disease was permanently aborted.

During the past year the intravenous use of typhoid vaccines have been quite extensively employed, first by Penna, then by Kraus and Mazza of Buenos Ayres, and later independently by a Japanese physician, Ichikawa. It might be stated that much earlier than this intravenous typhus vaccine had been used in France with undetermined results. Kraus used 50 to 100 millions of Vincent's typhoid vaccine, a polyvalent ether killed preparation. Ichikawa used a vaccine sensitized with the serum of patients convalescing from the disease; the bacilli mixed with the serum was placed in the incubator for five or six hours, then centrifuged, washed in normal salt, and finally 0.3 phenol added and the vaccine was ready for use. He measured the bacteria by the platinum loop, so it is impossible to state the actual dosage. In the reports from German sources both sensitized and unsensitized vaccines have been used, the sensitized vaccine being prepared as a rule after the method of Besredka. Either the dead or living cultures by this method are sensitized in immune horse serum. Gay and Claypole in this country have used the bacterial sediment of alcohol killed, sensitized bacteria from which the endotoxins have been removed. It is quite difficult to determine whether better results have been obtained by the use of the sensitized vaccines. The percentage of cures with both sensitized and unsensitized vaccines with different observers show such marked variations that it is impossible to draw definite conclusions. From certain observations to be reported later it appears quite improbable that sensitization of the vaccine increases its value.

The intravenous injection of two to three hundred million typhoid bacilli is followed within about thirty minutes by a chill and marked transitory rise in temperature, soon dropping to normal or subnormal. Following this the temperature may take one of three courses: remain subnormal for a few hours or at times a few days, then return to and remain permanently normal, thus terminating in crisis. Second, after the chill and fall in temperature, there is a gradual or rapid rise to about the previous level, then a daily reduction in temperature reaching normal within there to five days, thus terminating by lysis. Finally a group where, after the chill and fall in temperature, there is a rise to the previous level and the disease pursues its course unmodified. In not all cases is there a chill following the injection. Meyer has reported twenty-eight cases treated with excellent results, and in none of these was there a chill. As far as the primary reaction is concerned this is the same in those in which the disease is aborted and those unaffected by the treatment. In the aborted cases coincident with the disappearance of the temperature there is a marked improvement in the patient's general condition. Gay and Claypole have studied carefully the effect on the leucocytes following the injection. Immediately after the injection a marked leucopena developed, which in one case reported fell to 950. Then a gradual rise occurs, which within twelve to eighteen hours may reach twenty to thirty thousand, returning then quite rapidly to normal. Gay believes this hyperleucocytosis is an important factor in developing an immunity.

The total reported typhoids treated by this method is still too small to enable conclusions to be drawn regarding the effect on mortality, relapses or frequency of complication. Ichikawa, who treated the largest number (87 cases) reports a mortality of 11, with 30 per cent. in the controls. Others have reported lower mortality in the treated than in the controls. These results, however, are not more favorable than those that may be culled from the literature where patients have received the vaccine subcutaneously. It is, therefore, too early to determine whether this new method of treatment will lower the mortality. Relapses occur quite frequently after the intravenous vaccine, the temperature remaining normal for a few days, then a gradual rise with a febrile period of several days. The one striking result following the intravenous use of the vaccine is the immediate and permanent interruption of the fever. All of those who have used this method report a varying percentage of patients in which the disease has

been aborted. I have collected a total of 226 cases so treated from six investigations, Rhein, Eggerth, Gay and Claypole, Meyer, Csernel and Ichikawa, with 121 or 53.5 per cent. reported as terminating by crisis after one or more injections. When these statistics are carefully analyzed we find that the term aborted has not been confined to those cases where an abrupt interruption of fever occurred, but also to patients where a definite and gradual fall in temperature was noted. Meyer treated twenty-eight cases, twenty-six of which he reports were aborted. However, when the fever curves are studied we find that following the injection the fever terminated by lysis rather than crisis. It is nevertheless proper to speak of both of these types as being aborted as a result of the treatment. Inasmuch as Meyer's results are the best up to date it should be said that practically all of his patients had previously been immunized against typhoid, and as he states such patients in case they contract the disease have it in a very mild form. Csernel reports the least favorable results, only 19 per cent. of his 21 cases terminating by crisis, an additional 47 per cent. terminating rather rapidly by lysis. Only two patients in his series were unaffected by the treatment. With statistics up to date it can be said that in at least 50 per cent. of the patients treated the disease was definitely shortened.

The dosage used shows quite wide variation, the amount at present recommended for the initial treatment is three hundred million. If no results are obtained after a lapse of four days a second dose of five hundred million is given, and if necessary after a lapse of the same period of time Meyer gave one billion. On the other hand Kraus obtained very good results with fifty to one hundred million and Csernel fifteen to thirty million. In the majority of cases a single injection, provided the patient is going to react favorably to the vaccine, produces definite results. Eggert, after a single injection in thirty-four out of forty-eight cases observed a crises with permanent disappearance of fever. He used 1 c. c., equal to one billion of Besredka's living sensitized bacteria. Judging from his statistics the large dosage gives the best results. When no permanent results follow a single injection a termination by crisis or lysis may follow a second or third injection. In some cases following a single injection the crisis does not appear for two or three days as in one case from Csernel's series.

Whether beginning this treatment very early in the course of the disease gives better results than when begun later has not been determined. The majority of cases treated were in the second week of the disease. Ditthorn and Schultz claim the best results after the tenth day, as the cells have then been given an opportunity to form antibodies. They report that in the incubation period the vaccine is of little value.

From the violence of the reaction following the injection unfavorable consequences might be feared. Reports up to the present time would indicate, however that there is very little attendant danger. Extremely weak patients or those with bad hearts are unsuited for the treatment. Among those reporting unfavorable sympoms are Sladeck and Kollowski, who treated only four cases and each developed marked diarrhea with one fatality ascribed to the vaccine. No other investigator has reported symptoms of this character, so their explanation is difficult. Eggert reports a hemorrhage appearing immediately after the treatment and terminating fatally. He reports a second death occurring soon after the injection, where neither the clinical nor autopsy findings explained the cause. As already stated, Eggert's dosage was very large, one billion. There is no positive evidence that the vaccine caused death, but Eggerth's experience should make us hesitate to use the very large doses. It would appear that on account of the rise in blood pressure during the chill the danger of exciting hemorrhage cannot be ignored. The blood pressure in the five cases treated on my service at the county hospital was taken before and then during the chill. In one patient there was a rise of 25 m. m., in the others less. We have previously observed, however, that even a more marked increase in blood pressure may occur during a chill as in the chill following the intravenous injection of immune chicken serum in the treatment of pneumonia. On one occasion we obtained a rise in pressure of 45 m. m. Further observations will be needed before it can be stated positively that the intravenous vaccine treatment of typhoid is free from danger.

I decided during the present autumn to use the intravenous vaccine on all the typhoids on my service at the County Hospital. In addition, Dr.

Walter Hamburger kindly permitted me to have his cases. On account of the unusual infrequency of typhoid this year only six patients entered the two services during this period. Dr. Gaarde kindly prepared the vaccine, using the Rawling's strain and sensitizing with serum from convalescents. Our initial dose with one exception was three hundred million, the exception noted received two hundred million. In each instance there was a violent chill with rise in temperature in one instance passing 107° F. One patient received a second dose three days later of five hundred million. No untoward results were noted. Leucocytes count were made just before, two hours and twenty-four hours after the injection. The twenty-four hour count in every instance showed a leucocytosis, varying from 9,500 to 15,000. In only one of the five cases was the course of the disease apparently modified. In this instance there was a typical crisis with temperature remaining normal. In one case the temperature dropped to subnormal, remained there twelve hours, and then rapidly reached the previous level, where it remained. A second injection of five hundred million three days later also failed to modify the course of the fever. In this series one death occurred due to acute appendicitis. These results as compared with others reported are poor. The dosage and preparation of the vaccine was the same as used by others who obtained successful results. It is true with one exception each patient received but a single dose of vaccine. However, the report shows that in the majority of cases where the disease has ended by crisis this occurred after the first injection.

Reference has already been made to the questionable values of sensitized vaccine, for the reason that apparently the reaction is not a specific one. Reference was made to Rumpf's results, using dead cultures of Pyocyaneus. He was a colleague of Fraenkel's who was first to use typhoid vaccine as a therapeutic measure. Suspecting that the favorable results obtained might not be specific in character, he prepared Pyocyaneus cultures and treated fifty-five patients with results which he states were identical with those obtained by Fraenkel. Ichikawa reports almost equally good results when the typhoid vaccine was used in paratyphoid. Krause reports equally good results when a polyvalent colon bacillus vaccine was used. He tried this on a single case of typhoid, but the results were so striking, the disease terminating by crisis, that there can be little doubt that this was due to the vaccine. Lüdke treated twelve patients with bouillon culture of colon bacilli, the dosage not given. Two of these terminated by crisis and in five others the course of the disease was definitely shortened. Finally Lüdke believing the reaction was not a specific one, treated ten typhoids with an intravenous injection of 1 c. c. of 4 per cent deutero albumose. Five of these terminated immediately by crisis. One reached normal within two days and only one was apparently unaffected. He saw no ill effects, there was no increase in the leucocytes and the titer of the agglutination curve was not effected. Lüdke treated one patient with Wittes' peptone, but without results.

All these results indicate that the reaction is not a specific one, and opens up a new view point in vaccine therapy. It may assist in explaining the favorable results obtained where vaccines have been used indiscriminately. It may explain why favorable results are at times obtained in asthma after the use of vaccine of various compositions. It probably also explains the favorable results obtained in some instances after the use of Shaffer's vaccine, which during the experimental stage was given in large doses intravenously, giving rise to a violent chill, and often followed by marked amelioration in acute arthritis, both in the temperature and joint tenderness. It would appear that following the injection of non-specific foreign protein, a rapidly developing immunity may result, probably due to the sudden mobilization of enormous amounts of loosely fixed antibodies or ferments. These results are in accord with the observations of Vaughan, who reports the presence of a ferment in the blood serum after the injection of egg white. Furthermore, that after the use of egg white, animals showed the same degree of immunity to colon bacilli as they did after injection of colon vaccines. He also demonstrated that animals immunized by prodigiosis cultures also showed a certain degree of immunity to typhoid and cholera microorganisms, thus showing that the immunity imparted was not specific. While up to the present time the use of non-specific vaccines or albumoses have been limited to the treatment of typhoid, there is no reason to

believe that it may not apply equally well to other acute infections. The rise in temperature after the intravenous vaccination probably arises from the protein in the bodies of the destroyed and digested bacteria. If this be true the question arises, can we safely suddenly immunize against acute infections in this manner? Perhaps time will show that the sudden destruction of enormous numbers of bacteria in this manner may set free such a large amount of toxins that a fatal termination may follow. Whether the future shows that this method of treating acute infection has therapeutic possibilities, it at least opens up an important field for speculation and investigation.

For complete references to the literature the reader is referred to the paper by Frederick Gay. —*The Journal of Laboratory and Clinical Medicine*, 1915, i, 13.

DEMENTIA PRAECOX STUDIES.

SOME RELATIONS OF THREE LIPOID CONTAINING ORGANS AND THEIR CONDITION IN PATIENTS WITH THE CLINICAL DIAGNOSIS OF DEMENTIA PRAECOX.*

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We have no intention of presenting the strictly scientific aspect of the lipoid content of the brain, the adrenal and the sex glands, but simply to present enough of our material knowledge of these three organs to permit an interpretation of some of the findings in adolescent insanity.

There is a remarkable correlation between the brain, the adrenal glands and the sex glands. This is forced upon one's attention from whatever side the subject is approached. In hydrocephalus the adrenal medulla is absent, probably as a congenital anomaly. Carlo Ceni has recently shown that mild concussion of the brain is attended by a prolonged disappearance of spermatozoa from the testicle. It is quite uncertain whether the low blood pressure which attends cerebral concussion is due to the direct injury of the brain centers or to the secondary paralysis of the adrenalin-forming portion of the adrenal glands. We shall not attempt to reconcile these and many other correlations which it is necessary to mention, but await further discoveries and further developments before this reconciliation can be hopefully undertaken.

The adrenal gland and the testicle arise in the same embryonal region and both organs contain portions of that matrix which gives rise to the adrenal cortex and to the chromophil cells of the testicle. The glandular elements of the testicle and the medullary portion of the adrenal have entirely distinct and separate embryonal origins. The medullary portion of the adrenal develops from or at least contains parts of the sympathetic nervous matrices. The origin of the seminiferous tubules in the testicle is wholly glandular and unrelated to the sympathetic nervous system.

Of the glands of internal secretion the adrenal gland has been most successfully studied and the function of the medullary portion has been most completely explained. The secretion of this gland is known to depend for its activity upon a substance isolated in 1901 by Takamine and called by him "adrenalin," the exact chemical composition of which was discovered and published two years later by his colleague, Professor Aldrich. Since that time the medical world has been supplied with a definite, measurable, chemically pure physiologic secretion of the adrenal medulla, which is the first glandular secretion accessible for experimental purposes. Adrenalin has the chemical formula, $C_{10}H_{15}NO_3$, and has been synthesized by Dzierzgowski, but the synthetic product is not as active as the natural product because it is composed of two optically active bases, one of which is nearly inactive physiologically. Adrenailn is related to the toxic ethylamines and has the amino group on which the toxicity of each one of them depends in the beta position. It has the greatest pressor action of them all.

1. *Adrenalin pressor phenomenon:* The physiologic actions of adrenalin are many, but we shall consider at this time only a few of them. The most significant action of adrenalin is its pressor potency—the power of the substance when introduced into the circulation to raise the blood pressure. This is best studied upon the decerebrated cat by the injection of small doses of adrenalin solution directly into a vein and noting the automatic record of the carotid pres-

*Read before North Central Illinois Medical Association at Peoria, Dec. 7, 1915.

sure upon a revolving drum. By this method it is demonstrated that the action of adrenalin is almost instantaneous, that it continues for but a very short time when it subsides to be followed a few moments later by the very slightest shadow of a rise. Such a record is shown in the accompanying reproduction. Fig. 1.

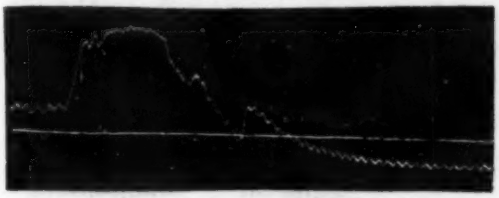

Fig. 1. Adrenalin reaction from injection of 1.0 cc. of solution of adrenalin 1-10,000 into femoral vein. Record made from canula in carotid artery. (Dr. Julian Lewis.)

One of the peculiarities of this pressor action of the adrenalin is the fact that the base or salt is not consumed or bound by this reaction as an alkali is fixed when it meets an acid. If the blood of the animal which has ceased to react to the dose of adrenalin is passed into the veins of a second animal under similar conditions, that second animal's blood pressure will rise almost as high as did the blood pressure of the first. Many ingenious theories have been proposed to explain this phenomenon, but their discussion is irrelevant to our purpose.

When 0.5 c.c. (P, D. & Co.'s) adrenalin solution 1-1000 is injected into the deltoid muscle of a healthy man, the pressor action of the dose is almost as great as it would be were the injection made into a vein; but as Meltzer has shown it is somewhat more protracted, lasting from ten minutes to an hour. The average rise of blood pressure under these circumstances is anywhere from 40 to 80 mm. of mercury. The following chart, Figure 2, is such a record made recently on a young man who was just recovering from some excess in the use of alcohol. It will be noticed that the rise is rather rapid while the fall is not as sharp as it is in the case of the intravenous injection in the decerebrated cat.

2. *Adrenalin insusceptibility:* (Willi Schmidt phenomenon.) In most cases of dementia praecox the blood pressure is low. The peak in nearly a hundred cases of young dementia praecox patients taken during the acute manifestation was between 85 and 90 and the extremes were 55 and 120.

In many such patients with the diagnosis of dementia praecox, especially in the catatonic

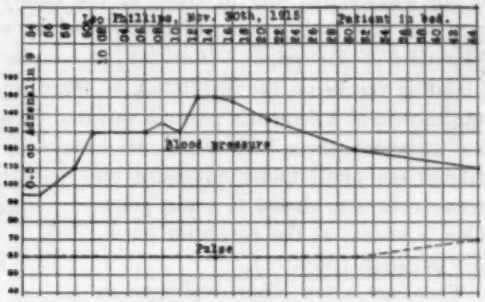

Fig. 2. Blood pressure and pulse in patient after 0.5 cc. 1-1000 solution of adrenalin, P., D. & Co. This young man gives history of having catatonia one year at least ten years ago.

forms, the blood pressure curve after the intramuscular injection of 0.5 c. c. 1-1000 adrenalin solution (P. D. & Co.) is quite paradoxical. As a rule the blood pressure falls during the first two minutes after the injection, from 5 to 20 mm. of mercury and it slowly rises again, reaching the datum in 20 to 50 minutes. The following chart was made December 1, 1915, from a young married woman with catatonic dementia praecox of less than three months standing. Fig. 3.

3. *Adrenalin mydriasis.* (Schultz phenomenon). If a few drops of a 1-1000 adrenalin

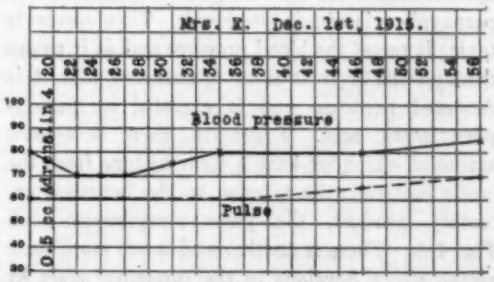

Fig. 3. Record of adrenalin insufficiency reaction, Mrs. K., Dec. 1. Slight but positive adrenalin mydriasis. Abderhalden reaction to ovary and corpus callosum.

solution be instilled into the conjunctival sac of the eye of a healthy person and this is repeated two or three times during 10 minutes, no modi-

fication of the pupil can be recognized at the end of half an hour. If, however, the same maneuver is performed upon a person whose sympathetic has been cut above the superior cervical ganglion or the sympathetic cut in front of the ciliary ganglion, this instillation will be followed by a dilatation of the pupil. (Cordes) A similar dilatation results on the instillation of adrenalin into the eye of a dementia praecox patient. In a few instances where both pupils are excessively dilated the pupil under adrenalin reaction contracts almost to a pin point. This is known as the adrenalin pupillary paradox, (Meltzer).

There are a few other conditions in which adrenalin mydriasis occurs. We have recently noticed it in connection with the pressor adrenalin paradox during the crisis of tabes and it perhaps occurs in such cases of asthma as are relieved by adrenalin injections into the muscle or vein. Of course, many cases of tabes have the Argyll-Robertson pupil and are not susceptible to the test.

4. *The toxic amines:* In order to present the next phenomenon it is necessary to diverge a little. A number of toxic amines are produced in the body, some in health and more in disease, by the action of microorganisms upon the normal or abnormal secretions of the body and the contributary elements accidentally presenting themselves in the food. When tyrosin is acted upon by one of the intestinal organisms ergotoxin or paroxyphenylamin is produced. This amine is toxic; it raises the blood pressure and as it passes through the liver it is so deaminized that it is rendered nontoxic and is excreted as paroxyphenylacetic acid. Ergotoxin, then, is a toxic amine of which we have a clear history from the crude material, the tyrosin, to the harmless excretory product, the paroxyphenylacetic acid. Fig. 4-A. There is another and much more toxic amine which develops in the intestinal tract by the action of the inestinal messmates of man upon a normal constituent of the mucosa of the intestine, that is by the action of the colon bacilli, or the bacillus aminophillus intestinalis upon histidin. This toxic amine is known as the betaiminazolylethylamin. Fig. 4-B. It depresses the blood pressure and contracts the finer bronchioles of the lungs. When injected into guinea pigs in fatal doses it produces death in the condition of anaphylaxis, that is by asphyxia with the lungs distended with air. The fate of this amine in the body is not definitely known. When injected into dogs it is almost harmless. Eustis has shown that an extract of the turkey buzzard's liver renders the amine harmless with the production of an indol base, but this is hardly consistent with the composition of the original toxic amine.

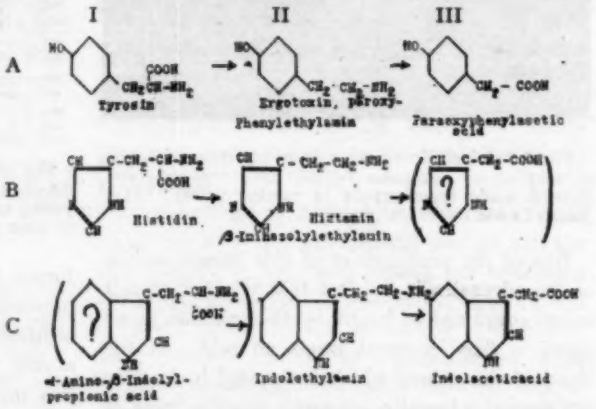

Fig. 4. The three toxic amines, A, B, C. The source of their formation in the intestinal contents, Column I; the chemical formulae, Column II; and the form in which each is excreted, Column III.

There are, however, many observations that suggest the potency of the human liver in a state of health to take care of a moderate quantity, at least, of this toxin. There is a third toxic amin, Fig. 4-C., the origin of which in the intestinal tract is still unsolved, but its deaminization by the liver is very well demonstrated and the recognition of the excreted products in the urine, both qualitatively and quantitatively, are fortunately quite easy. This is the indolethylamin which arises in the intestines by putrefaction of some undiscovered albuminoid. It is excreted in the form of indolacetic acid for which we have relatively easy and simple tests. It is, however, far less toxic than either of the other amines and it raises the blood pressure in a very moderate degree.

5. *The Antagonism of adrenalin to the toxic amines:* There is one characteristic phenomenon connected with these amines in which we are particularly interested and for which this lengthy description has been introduced. If an animal is given a nonfatal but physiologic dose of any one

of these amines or a combination of two or more of them and is then immediately given a pressor dose of adrenalin, the action of the adrenalin is paradoxical, that is, the blood pressure falls instead of rising.

This is exactly the same reaction as we observe in dementia praecox. The injection of adrenalin (0.5 C. C., P. D. & Co.'s, 1-1000 adrenalin solution) which ought to raise the blood pressure 40 mm. of mercury, generally produces a fall of from 5 to 30 mm. as in the following blood pressure record of a mute and catatonic patient. Figure 5.

6. *The adrenalin paradox in gastric crisis of tabes:* In several cases of gastric crisis in locomotor ataxia a similar adrenalin reaction has been observed. The patient in the agonies of crisis with a blood pressure of 150 was immediately relieved of pain and the blood pressure fell to 120 in two minutes. The patient fell asleep, the blood pressure remained down for

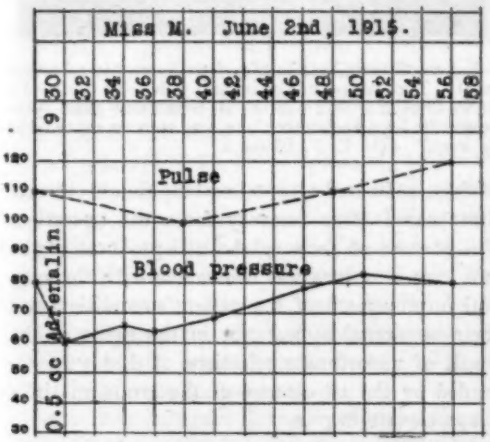

Fig. 5. This was the record of adrenalin reaction in Miss M., June 2, 1915. She had marked adrenalin mydriasis. She has since that time greatly improved.

fifty minutes and then began to rise slowly. The patient awoke with the recurring pain and the pulse which had remained almost unmoved rapidly rose. Such an adrenalin pressor reaction in a case of gastric crisis is reproduced in Fig. 6 and another in Fig. 7.

7. *Adrenalin insusceptibility and the toxic amines:* Since these two reactions, the one in dementia praecox and the other in the gastric crisis of locomotor ataxia, are similar to what we should expect if the patients had previously been poisoned with any one of the three toxic amines, it occurred to us to study the stool and discover, if possible, the presence of the microorganisms

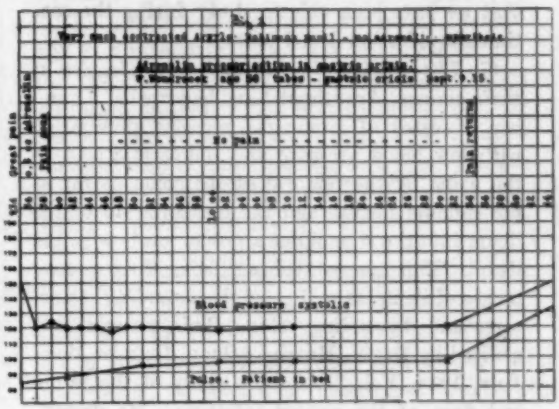

Fig. 6. Gastric crises, Mr. W., first attack noticed. The relief of pain was instantaneous and constant but the patient did not sleep.

that change tyrosin into ergotoxin and histidin into betaiminazolylethylamin, to discover if possible the presence of any one of these amines in the stool itself, and to examine the urine of

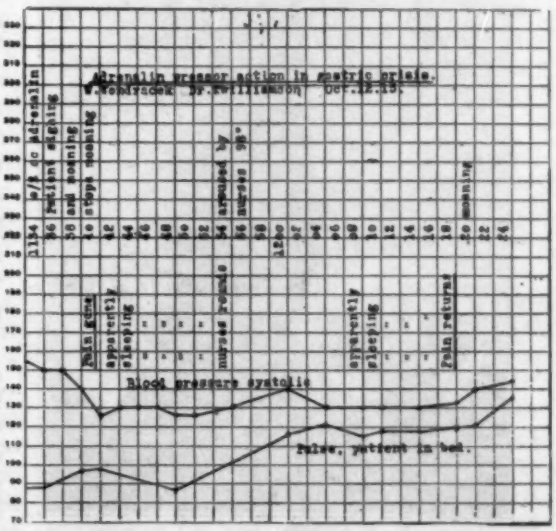

Fig. 7. Mr. W., second attack of gastric crisis in which gastric ulcer was diagnosed. The patient slept. Pain disappeared at end of four minutes.

these patients before and after the crisis and during and between exacerbations of the disease for the products of their catabolism preparatory to excretion.

Up to the present time we have found very large loads of betaiminazolylethylamin in the stools of gastric crisis patients and smaller loads in the stools of the dementia praecox patients that we have been able to study during the continuance of a low blood pressure.

8. *The relation of cecal stasis to production of toxic amines:* Arbuthnot Lane has treated a number of cases of prolonged nervous prostration with low blood pressure and indolacetic acid in the urine by the removal of the colon as far as the sigmoid flexure and the implantation of the ileum into the sigmoid at a proper angle with the ileum. This necessitated sacrificing three or four inches of ileum as well as of the ascending, transverse and descending colon. This material was utilized by Dr. N. Mutch,[1] (Quar. Jour. of Med., July, 1914, Vol. 7), for the study of the fauna and flora of the excised intestine. He demonstrated the presence in the intestine below the iliocecal valve and sometimes an inch or two above it, of the microorganisms that are capable of producing betaiminazolylethylamin when

Fig. 8. Robert Frank; six hours after barium meal. Stomach in the pelvis, compare figures 60, 61 and 62 on page 64 of Lane's "Operative Treatment of Intestinal Stasis," Nesbit Co., London, 1915. (Dr. E. F. Blaine.)

growing upon a nutrient material containing 3 per cent. of histidin. He was not, however, able to recognize the catabolized amine in the urine, although he found that the products of catabolism of ergotoxin and indolethylamin, which are readily recognized, and were found in the urine

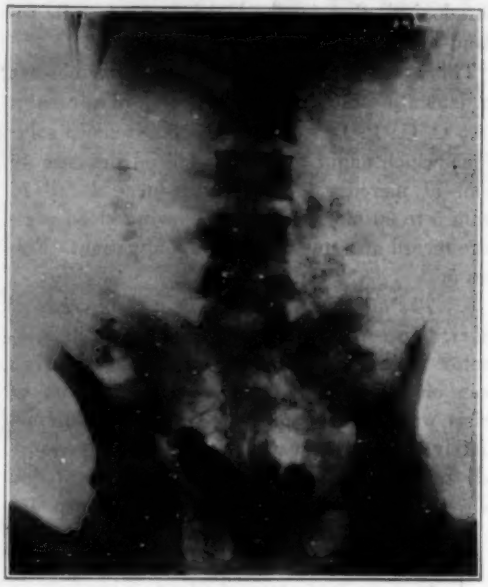

Fig. 9. Robert Frank; fifty-four hours after barium meal. The entire colon is still filled, as noted by fluoroscopy and increase in the amount of gas. "Opposite the hepatic flexure there was seen an extra bend or loop." (Dr. E. F. Blaine.)

of these patients before operation, almost entirely disappeared after recovery from the operation. The absence of these catabolized products of the two known amines was coincident with the general improvement of the patient's condition and their accidental appearance in the urine as the result of unfortunate selections of diet were attended by the appearance of the symptoms in a proportionate degree.

9. *Fluoroscopic examination of dementia praecox patient after a barium meal:* At the present time it is possible to say that the few cases of dementia praecox in which there has appeared coincidental low blood pressure, paradoxical adrenalin reactions and betaiminazolylethylamin in the stool that there has also been demonstrated a considerable retardation in the intestinal tract with exaggerated retardation in the ascending colon and the first half of the transverse colon. Every one of these patients has manifested at one time or another the symptoms of acute mucous colitis and in two cases an obvious local obstruction in the transverse colon

near the hepatic flexure has been demonstrated by fluoroscopic examination (in one case by Dr. E. F. Blaine and in one case by Max Hubeny) and

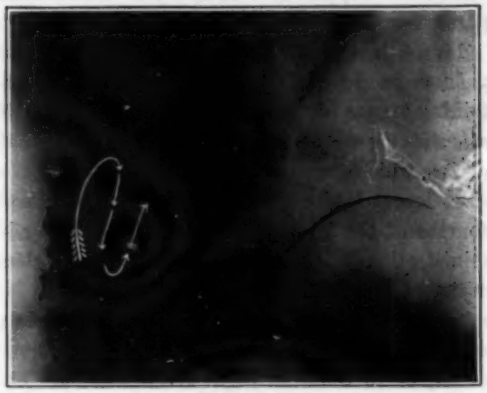

Fig. 10. Rudolph H——; fifty-four hours after barium meal. By fluoroscopic examination a fixed extra loop was found as if attached to the gall bladder. Small pieces of the meal could be passed through by massage. Such a small piece can be seen in the reproduction. (Mr. Max Hubeny.)

by x-ray photographs of a barium meal. The accompanying photographs, Figs. 8 and 9, (Blaine), represent the position of such a meal at the end of six hours and again in the ascending and first portion of the transverse colon at the end of fifty-four hours in a patient with a blood pressure of 90, an adrenalin mydriasis and an adrenalin reaction raising the blood pressure to 120 in seven minutes, falling to 100 again at the end of twenty minutes. The load of beta-iminazolylethylamin in 100 grams of solid stool was more than 0.001 gm. as estimated by the Eustis Eppinger method of skin reaction. Another patient's retardation is shown in Fig. 10. It is still more conspicuous.

10. *The defensive ferment reactions, the peptolytic index and the antitryptic index:* The defensive ferment reactions of Aberhalden show a dystrophic condition in the sex glands, the cerebral cortex, and the adrenals in nearly all dementia praecox patients. The exceptions are so few that they must be looked upon as conditions of the exhaustion phase of the reaction. The peptolytic and the antitryptic indexes are also high. These defensive ferments remain in the blood of the patient for months and years. In animals the defensive ferments remain three to six months after being injected into the circulation from patients or from animals. In the case of Leo Phillips, apparently recovered from clinical dementia praecox, the defensive ferment against cerebral cortex and pancreas were present in the blood ten years after relative recovery from a severe attack of catatonia of two years' duration.

11. *Morphologic findings in acute toxemias and in dementia praecox.* Todde has shown that the testicles of patients with dementia praecox are much smaller, weigh much less and are less liberally supplied with blood than the testicles of sane patients of the same age and size. He has shown also that histologically these testicles contain no spermatozoa and the glandular elements are broken down and shedding colloid cells, presenting a picture almost identical with that which is observed by Carlo Ceni after cerebral concussion, and by Herman Cordes and D. Haussemann after the acute infectious diseases such as pneumonia, cerebrospinal meningitis and erysipelas.

It has recently been shown by Elliott that the cortical substance of the adrenal gland reacts in a remarkable manner toward the infectious diseases. This reaction is not parallel with the reaction of the medullary portion of the adrenal. The load of lipoids in the adrenal cortex remain unchanged in starvation and in severe hemorrhages, but they rapidly disappear in pneumonia and practically every acute infectious disease except diphtheria. It is suggested that even in diphtheria in old people the lipoids are similarly destroyed.

12. *The relations of cerebral, adrenal and testicular lipoids to life and disease:* We have no notion what function the lipoids have in the process of life and nutrition. The lipoids of the adrenal gland and of the sex glands resemble no other lipoids in the body except, in a limited way, the lipoids of the brain. The lipoids of the brain are differentiated from each other chemically as cerebrin, phrenosin, kerasin and cephalin. Of all of these cephalin is the most studied and the best understood. Cholesterol is a near relative of the lipoids and yet no cholesterol is to be found in the brain. However, the oxycholesterol is found in the brain of adults but not in the brains of children. Dr. Paul Weston has recently studied the cholesterol to be found in the cerebrospinal fluid and has noticed that the average amount of cholesterol is greatly increased in the epileptic psychoses, in dementia praecox and in cerebral syphilis.

The lipoids of the adrenal cortex are highly refracting, doubly polarizing and in the living body they are liquid and yet crystallized. The blood vessels which circulate between the organized systems of the adrenal cortex are devoid of endothelium. The blood circulates in what appears to be lymphatic capillaries. The rapidity with which the lipoids disappear in toxemias would indicate that the relation between the circulation and these highly refracting crystals was intimate. Because the lipoids disappear so rapidly in the multiple neuritis of beri-beri and return so promptly after the experimental animals are fed upon vitamine or vitamine-containing food, we suspect there is some relation between the mobilization of vitamine and that of lipoids.

At the present time there is no way of explaining the disappearance of spermatozoa in the testicle and the disappearance of the lipoids in the adrenal cortex in cerebral concussion, in acute toxemias and in dementia praecox.

13. *The cyanosis and methemoglobinemia of dementia praecox:* Probably every physician has noticed the characteristic cyanosis which comes and goes in most patients as an early manifestation of dementia praecox. In a few instances careful examinations of the blood have shown an exaggerated polycythemia (6-8,000,000) and in a few of these cases spectroscopic examinations have demonstrated the presence of the methemoglobin or sulphhemoglobin-line (lamda 612-618), in place of the ordinary clear field of hemoglobin. The studies of Gibson and those of Mackenzie Wallis demonstrate the intimate relation between oxyhemoglobin and an intestinal retardation with an infectious process in the intestinal tract, analogous to that which results in the production of the betaiminazolylethylamin in Arbuthnot Lane's cases studied by Mutch. It is possible also in most of these patients to isolate from the saliva a nitrite producing organism, known as the nitrosebacillus which can be grown on artificial media. The residue from this growth filtered through a Berkefeld filter has the power of deoxidizing hemoglobin with the production of methemoglobin. This salt is then ready to absorb the sulphur from the sulphureted hydrogen of the intestinal tract with the production of sulphemoglobin. In one case described by Gibson there was a colon bacillus septicemia which was demonstrated by blood cultures. No one has yet made any rational explanation of the appearance and disappearance of cyanosis in dementia praecox patients.

14. *Conclusions:* In presenting these phenomena grouped about the three lipoid containing organs of the body, it is our desire *to call attention to the physical manifestations* of that disease which furnishes 10 per cent of the admissions to our insane asylums, and consumes three-fourths of the total budget of the boards of administration in the several states in a hopeless custody. The phenomena which we find in dementia praecox are not unlike the phenomena which are so obvious in acute infectious processes, or in conditions for which there are obvious, adequate mechanistic causes. The disappearance of the lipoids of the testicle, the adrenal and the brain in pneumonia is frequently accompanied by the delirium of pneumonia. The same may be said of erysipelas, typhoid, smallpox and such localized infectious conditions as appendicitis and abscess of the liver. The abnormal adrenalin reactions of dementia praecox are not unlike these reactions when the superior cervical ganglion, or the ciliary ganglion, is excised or when the whole organism is poisoned with one of the toxic amines. The appearance of the toxic amines in the stool occur in dementia praecox, accompanied *in a few cases at least* by the same intestinal deformities as we find in the cases operated upon by Arbuthnot Lane and studied by N. Mutch from a bacteriologic and a chemical standpoint. The further association of cyanosis which in some cases is due to methemoglobinemia and polycythemia is only a further exhibition of the action of intestinal infection upon the normal secretions of the intestinal tract and the normal elements of the food.

We would like to emphasize strongly the desirability of studying *coincidentally* the many manifestations of disease in cases of dementia praecox and do this from every possible standpoint, believing as we do that by such a method alone can the complicated phenomena of a disease which affects most strongly the three great lipoid bearing organs of the body be rationally explained.

From this broken sequence of phenomena it may not be perfectly obvious to the reader just what conclusions may reasonably be drawn.

We make no pretense to having discovered the etiology of dementia praecox and we suggest no method for its treatment. That the disappearance of the lipoid substance in the adrenal cortex and the disturbance of the glandular elements in the testicle in acute infectious diseases call no more loudly for a mechanistic interpretation than do the similar phenomena in dementia praecox seems to us an undemonstrable axiom. This paper is a plea for immediate liberal research on dementia praecox.*

*From the Laboratory of the Psychopathic Hospital, Cook County Hospital, Chicago, under the direction of Dr. Adam Srwajkart.

CO-OPERATIVE METHOD OF DIAGNOSIS.*

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The ultimate purpose of all medical activity is cure or prevention of disease. The human race is subject to a large number of inherited and acquired ills. In the course of centuries, through the efforts of civilized nations, and particularly through the labors and studies of individual scientists, the cause and the symptoms of a good many diseases have been unraveled. Cures have been found for many of them by accident or experiment, by layman and scientists. The greatest progress, however, has been brought about by the ability of scientific men to prevent many of these diseases eliminating their cause.

If one wishes to practice medicine, he must familiarize himself with the most important methods of treatment, but most of all must he be familiar with the signs or symptoms of disease. He must recognize it when he sees it. Is it possible that there is any physician in the world who would be familiar with all signs and symptoms of the diseases and would he recognize them in a concrete case? No. There are some of the diseases which are more frequent—so-called "common diseases," which even every layman recognizes; there are others, which are so difficult to recognize that even the best minds fail to do so. We call this recognition, with the technical term, "diagnosis."

The diagnosis has been regarded as the most important part of medicine. One can easily find out about remedies, about the cause, about the progress and about the prospect of a case, if one knows what is the matter with the patient.

Science has, therefore, developed from the earliest times—methods of finding out, or methods of diagnosis.

The history of the methods of diagnosis is very interesting. From time immemorial there have always been people, who were more interested in sickness than others. They had some sort of intuitive power of instinct, something that we could call tact, which would tell them what ailed a person. It is quick intuition, at a glance, and often correct. It is a rapid way of thinking of these individuals, which is responsible for such good behavior of their mind; and happy is the physician who possesses, besides his knowledge and training, this quality. Many are naturally gifted with it, many learn it through experience and many never learn it, even with the greatest opportunities, but a large number of men can be trained to recognize disease even if they are not naturally talented and endowed with that rare critical mind. They may be good physicians at that. There is some consolation, therefore, even for those who have not that luck of natural gift.

If we follow the development of these methods of diagnosis, along side the development of medicine, we observe that it has kept pace with the progress of science.

At the time of a low state of development of medical science, there were also very inadequate methods of recognition of disease. As the knowledge of causes and science of disease progressed, the methods became more complex and more difficult. In our times, they are so complicated that there is hardly any man, who could boast of knowing them all perfectly.

In the olden times the physician would be called upon to administer help and give consolation. He did more of the latter, and whatever he administered in the matter of help, was such remedies or manipulations as he had learned through practice, or from others. Some of these means were very speculative, miraculous, with no reasonable connection of cause and effect; some of them were common sense treatment.

Examination of the patients for symptoms of disease was rare, and is a matter of later development, although some signs have enjoyed popularity for many centuries.

The tongue, which is so much neglected now-

*Read before the Chicago Medical Society, Dec. 1, 1915.

adays, was a very important symptom for centuries. The appearance of the urine was also a very popular criterion. The pulse has played an important role ever since medicine started to be scientific.

There are some stages of development in the methods of diagnosis perceptible. Up to very recent times, however, they were very primitive. The physician was a philosopher, making his diagnosis more from speculation and calculation than from actual examination. He arrived at the side of his patient, listened to the complaint, looked wise and deliberated, and then by calculation, made out what he thought to be a correct diagnosis. The patients looked up to him as a sort of supernatural power, an oracle, a collection of wisdom, and with awe at his presence. He was highly respected. He looked very dignified and had somewhat of the priest in him yet, from whom he originally derived his science.

Gradually he began to look at the tongue and felt the pulse, looked at the urine; science advanced; temperature and fever of the patient began to play an important role, change of pulse and circulation began to have significance. Other signs, which were clearly visible, like eruptions upon the skin and tumors, became apparent and more important. The use of the thermometer had made a great difference in the aspect of disease, although the change of pulse rate had already been regarded as a sign of fever.

At the close of the 18th and the beginning of the 19th centuries, perhaps, the most important changes took place in the methods of diagnosis. The appearance of the microscope brought about a tremendous upheaval, although not used at first at the bedside, but more as a plaything and a method of botany, than of medicine.

The gradual acceptance of the post mortem examination, and the introduction into the science of its results; the looking for the signs of the pathological changes, during life time, as introduced by some of the foremost pathologists, again changed the methods of diagnosis; palpation and percussion were methods which were introduced into the realm of diagnosis.

There are certain names which are closely connected with these original methods. The appearance of these famous men in medicine mark milestones in the method of diagnosis. We need mention only a few: Bright, with the diagnosis of albumin in the urine; Laennec, with the plessimeter; Oppolzer Skoda, with the stethoscope, are such men.

Gradually, however, the methods became more complicated; the microscope was used at the bedside for the examination of secretions, excretions, tissues and gradually for the recognition of microorganisms.

The chemical laboratory, with all its reagents and tests, was of great importance. There was a time, however, when the physician could master these methods, he was an excellent diagnostician and a good physician, he could employ them all because they were so simple and so practical. With some care and study, he could become an expert diagnostician. This time is within the reach of our own memory. At the time when we began to study medicine, bacteriology came first into use. We advanced with bacteriology. The diagnosis of blood began to develop, then came the marvelous discovery of the x-ray by Röntgen, its introduction into science, then microscopy and bacteriology began to branch out into difficult tests; serum tests, vaccine tests, Röntgenology began to split up into fluoroscopy and skiagraphy.

Surgery made great strides. We opened the body studied pathology on the living, and detected symptoms of disease unknown to that time. Most important, however, was this method, because by actual exploration of the living we could convince ourselves and others of the truth of our diagnosis.

The medical and surgical methods became so diversified, so intricate, the apparatus so multiple and so complicated, and so rapidly changed and improved, that the average physician, who is honest and conscientious, is unable to keep step with it, and here we have arrived at the present time.

Of course, with all the advancement of these methods, experts have developed in the different lines. They established laboratories for the use of those physicians who were not capable of making a laboratory diagnosis themselves. Many physicians have not kept up even with the knowledge of the methods, much less with their use. They still are in the habit of using either the original speculative method, or the primitive examining method, and unfortunately base upon these very insufficient methods, the most modern treatment, which must bring them often into conflict with themselves and with their results.

Operations are undertaken by them on speculation, theories, etc. Asepsis and progressive surgery has handed over to them weapons which become dangerous in their hands because of lack of diagnosis.

The question arises—what should we do to improve the conditions? One thing is sure and may be placed at the head of this whole consideration—there is no man living who can be an expert in all these lines of investigation nowadays. There are very few living who are experts in a part of these lines; still we all are after the best results.

The public demands the best and we are obliged to give them the best in us and in our science. In the struggle for existence those who do give the best will survive, the others will be brushed aside, fall behind, and will not be able to compete.

There are several ways out of this dilemma. Let us see how the different men help themselves out of the same. I will not speak of the charlatan, imposter or the pretender in medicine, or of the quack, but I will only speak of the men who mean to do the best but do not know how.

There is at first, the general practitioner, who has an average good knowledge, a fairly good experience, a good intuition, but not an expert in modern diagnostic methods. In a large number of his cases he makes a diagnosis with his common method. When difficult cases arise he either gives the case up to his more fortunate neighbor, or the patient gives him up and goes to his more fortunate neighbor. He keeps the patient with a sort of vague diagnosis, and of course a vague treatment, as long as he can. He often misses an important diagnosis, he often does not recognize an early cancer, and allows the patient to pass into a stage of inoperability and becomes therefore, through his ignorance or through his negligence, a cause for the patient's loss of life. If he is very conscientious he helps himself by consultation. He consults a man whom he regards more competent, perhaps an expert in a certain specialty, in which he thinks that case belongs. Large number of the practitioners are afraid, however, of consultation, because the public has come to regard the consultation equivalent with the acknowledgment of ignorance on the part of the physician and they lose confidence, going either to the consulting man directly afterwards, or if he does not accept them, to some other man whom they regard more competent. Nobody can blame them, and the practitioner, knowing this difficulty, refrains as much as possible from consultations.

"A consultation is equivalent to giving up the case," I have heard many a doctor tell me, and truly so. Often they consult only when the patient urges them, but is that the best method? This is also a sign of loss of confidence on the part of the patient.

In many instances the consultation has been regarded as reassurance on the part of the consultant, that the patient may be lulled into a more confident attitude to his family physician.

Some more ambitious and conscientious practitioners try to make a better diagnosis by availing themselves of laboratory and expert diagnosis, sending their patients to the laboratories, sending secretions, blood, etc., for examination, sending them to the x-ray laboratory and getting reports.

I will dwell a little more on the difficulties of these methods although they are excellent in a way. They have their difficulties and drawbacks, they can be only routine examinations unless the physician discusses the case very accurately with the laboratory people.

The laboratory men, as a rule, are excellent specialists in laboratory examinations, but they are out of contact with actual disease. They do not see the typhoid patient for whom they make a Widal test, they do not see the patient whose sputum they examine, they become, gradually, routine experts who give a truly unprejudiced and objective report of that which is subjected for examination. Routine is often a drawback. For instance, the examination of urine can be made in five minutes or may take hours, it may be an all around examination in the usual, typical, uniform manner, or an examination for a special detailed purpose. It may be necessary, and would be suggested if the laboratory expert would know something about the case, that an animal experiment with inoculation, a special sediment test, etc., be made, but he does not know, and what interest is there for him in making such a test? He does not hear afterwards what his results have yielded in the general diagnosis; it must be a loathsome uninteresting business.

Still more important becomes this difficulty in

the hands of the fluoroscopist and Röntgenologist. His method has so many wrinkles and difficulties, that unless he is in contact with the clinic and capable of verifying his findings, correcting his mistakes, he becomes entirely visionary and speculative, and in this way his result is very much less valuable.

Pictures do not lie, we hear say, but they do lie if you do not know the conditions under which they were taken. If it was not for that fact, I think the pictures in which a person is shown, in the movie show, jumping from the river onto the shore would be a fact, while in reality it is a freak of the moving picture, brought about by certain technique.

We see therefore that the disjointed laboratory and expert examinations, of which we are so proud, by using the black on white diagnosis of the laboratory for diagnosis, loses a great deal of its weight. Still consultation and laboratory methods are the best means by which to make a diagnosis. It has been advocated for some time, by men who have seen these difficulties, to use the expression "team work." I personally do not like that term, but I think that the best effort in that direction is brought about by, what I would like to call, "co-operative method of diagnosis."

Individually and alone, hardly any practitioner, even the very experienced, is capable of making a scientific diagnosis. This seems rather harsh on our profession, since it has, with the laity, the reputation of being able to tell in each case what is the matter. It is only in those cases which are clear pictures of pathologic changes, that the experienced man can make positively a diagnosis. In most of the others, he can only surmise it, but not prove it.

In order to be able to come as near as possible to an exact scientific diagnosis, the examinations must be done by experts and one can only become an expert, by constantly working at these methods. By making one or two blood counts a week, one cannot be an expert in blood counting; by making one Wassermann test a month, one cannot become an expert in Wassermann tests. One has to be constantly at it. The expert must control and check off his results by the examinations of the other methods, so that he can find out his mistakes and prove his findings. This is one of the most important points of my paper.

As it is, most of the laboratory experts are absolutely independent of the clinical and other laboratory experts and they give their findings objectively as they see them. In that way they are hardly ever told of discrepancies which would enable them in future cases to correct their diagnosis and have better results. This is especially true when findings can be corroborated by operations, post mortems or secondary symptoms, or where the findings of laboratories are contraverted by findings of other laboratories.

There are sometimes two or three different possibilities, between which the laboratory men might choose, and knowing a little more about the clinical history, it would lead him to look for other tests or suggest other methods, which might be of value in the diagnosis. This would necessitate that a patient should be examined by the different experts but that these experts should consult with each other. More especially is this true about the Röntgen examinations and those very important examinations by the fluoroscopist.

In the intestinal diagnosis for instance, a fluoroscopist is entirely at sea if he does not know anything about the clinical diagnosis. Some of the medical men, who have sent their cases to laboratories, have allowed the laboratory men to question about the history, but as a rule, the laboratory men abstain from questioning, thinking this is an infringement on the rights of the practitioner, and justly so, because some question, innocently asked, might disturb the entire confidence of the patient in his physician.

It seems to me that there is only one method which leads to a universally satisfactory result. This method, as I have said before, has been called by some "team work," but that is not enough. "Team" means individuals pulling together in one direction, towards one object, but that is not the way a diagnosis should be made. There must be pulling, a pulling apart, a pulling into different directions, and pulling into every direction, in order to unravel the secrets and intricacies of an obscure diagnosis.

For some time past, several years in a small way, we have systematically introduced into our work what I would call a co-ordinate and co-operative diagnosis.

Being aware, and satisfied, that I am not an expert in making laboratory examinations, I have made myself familiar with their possibilities, and with reading of their results as much as possible

I keep in contact with them as much as my time and understanding of the same allows, but I am perfectly aware that I cannot be an expert in any of these lines. I, therefore, have every case examined in every respect by experts in their lines. They receive as much information about the history and other clinical symptoms as is necessary, but nothing to prejudice them in any of their examinations. They examine individually in their lines and independently, and report their findings.

These findings are reported not so much in writing but they are discussed at a daily conference. In that way, often, new suggestions are made, and findings that may be based upon a wrong perception are ordered made again, sometimes three or four times in order to ascertain whether they were correct.

These daily consultations or conferences are very valuable for every one of these men, and have brought out diagnosis in some of those cases, in which none of us, individually, would have been able to make.

In case of operation, based upon a diagnosis, these experts are called at the moment when their findings can be either verified or contraverted, so that they may either see their diagnosis confirmed or disproved. This is a school for them to make them all the more expert in their diagnosis. If they have made a certain diagnosis a little hastily they will be more careful the next time not to make the same in another case; if they have been corroborated, it will make them enthusiastic and they will look for certain symptoms again.

This system must be organized. It cannot be disjointed and irregular. In order to achieve the best results, it must take time.

Each one of the men must have time enough to make a correct diagnosis. It is required to examine in rotation, sometimes by two at the same time, so that these experts must be in one locality, always at hand. This makes it, of course, difficult for many to employ the method.

How many expert diagnosticians are required? That is difficult to state. It depends upon the individual training and latitude of the field of each one. On the whole, I should think that the following specialties should be recommended in any instance in which a correct diagnosis can be made:

There must be one central person, acting as a judge and as a sort of a reassembling agency. He must be a man of good logic and experience, must know more or less what can be accomplished by the different methods of examination, must know the value of their results of the different men, and how much he can rely upon them, their meaning and their application for diagnosis. In our organization my brothers and I take his place.

There is a medical man, a man who is familiar with all the methods of percussion, auscultation and palpation, who examines the nervous system, intestinal tract, the heart and circulation system, and makes a general status of the case. He orders such blood and urine examinations as is required, according to the exigency of the case. Sometimes these examinations have to be directed into special investigations, in some instances, a very superficial examination must be made.

At the laboratory for instance, in a suspicion of an ulcer of the stomach or duodenum, a very accurate examination of the feces is to be made for blood, etc. To make this in every case would lead too far.

The examination of blood for instance, if made in every case and in every detail, would require an army corps of people, in a moderate practice, to do the work, besides it would scare and annoy many patients to make examinations which are unnecessary and often painful. Only such examinations are directed by him as appear necessary at the first instance.

These examinations, however, are made by special experts in laboratory. One party examines, for instance, chemically and microscopically urine and blood, another party examines carefully secretions and excretions for bacteria, makes examinations for Abderhalden and Wassermann tests and other tests, if such should be necessary. These laboratory experts are called back again in case their findings do not fit the picture and are requested to examine again and again if such discrepancies require the same.

There is an x-ray department and the man who takes charge of the whole department takes the pictures, but does not develop them, as it requires a specialist again, and therefore the development must be done by other people, who are technicians. This department has either a special fluoroscopist or the department head is the fluoroscopist. He must be a clinician, a physician with a great deal of clinical experience, who also

must be familiar with the examination of the cases in a clinical way, otherwise his fluoroscope pictures will be of very little value.

It is a mistake to think that any layman, a nurse, a sister or any photographer can be trained to be a fluoroscopist or an x-ray specialist. Only a clinician with a great deal of experience can be a good fluoroscopist. This is a specialty which can lead a clinician or a surgeon very much astray if it is not controlled and checked off by operation. He can produce artificially and on pictures almost anything which is wanted, if he should make use of tricks in photography or fluoroscopy, and, therefore, this specialty requires a very conscientious and good expert if it is to be of value for diagnosis. Most important, however, is that the surgeon should learn to read and interpret findings so that he may be independent and may control the findings of his expert.

The third valuable man is the man who examines the genito urinary sphere—the systoscopist and proctoscopist. To be an expert in this line requires a great deal of experience. Much damage can be done by somebody who attempts this method without the necessary experience and the results, particularly those that should be valuable to the clinician must be of such a nature that one can depend upon him. To catheterize the ureter is a trick which can be learned only by being at it all the time.

The nose, throat, eye and ear examinations require another expert. They are frequently necessary to complete the diagnosis, and it requires an expert who is not too narrow in his views. This is a great danger if the experts are working out of contact with the balance of the diagnosticians. The specialist, be he ever so experienced, after he becomes a specialist has unfortunately severed, in most instances, his clinical associations, in such a manner that he pays more attention to his specialty than to the general clinical aspect of the case. Most of the specialists are imbued with the importance of the manifestations of symptoms in their sphere, and refer a great many ailments and symptoms to these and, therefore, they easily make many a wrong diagnosis. Somebody might have a symptom in the eye, ear or nose which may be a part of a manifestation of a general disease, and still it may not have any causal connection with it, therefore, only by co-operative diagnosis, is it possible for the specialist to appreciate the symptoms within his special line.

The specialist of the mouth, the dentist, has come to be of importance of late. The throat specialist has led us to see that the tonsils are in many instances the cause of many other troubles. The specialist in dental affairs has cleared up many cases of obscure disease and helped to make a diagnosis in the same.

We see that this association of specialists in different lines, controlled and checked off by somebody who assembles their results and puts them down to their real value, will be capable of making a diagnosis in many instances which a single individual is not capable of making.

We come to a point which is very important and which has been dwelled upon in a lecture here, before the society, a couple of weeks ago in a paper by Dr. Charles H. Mayo. Such diagnosis is not a matter of a few minutes, or even half an hour. They cannot be made in an office as a rule, and consequently they are neglected in many instances or curtailed. They can be made only, as we might say, in a properly adjusted shop or hospital, with all its implements and its whole staff prepared for such examinations. The hospitals, up to this time, unfortunately have not made use of the facilities that the institutions offer to them by association, although, as I will state a few minutes later, the method is very old and used abroad for a long time.

Petty jealousies—an unfortunate attribute of our profession—have kept many good men from pulling together to accomplish excellent results.

It requires time to make a diagnosis and, therefore, it is necessary that patients with obscure ailments, should be admitted to these institutions for a few days, for the purpose of diagnosis. It is our experience, that in most of these instances, we require from two to three days, in some instances a week or even longer to make a proper diagnosis. Some examinations have to be done twice and three times, according to the result of our conferences.

We have, on the average, a number of cases for examinations only, at the hospital.

This method has many advantages which cannot be appreciated until one has made use of it. The practitioner, as a rule, who is confronted with the difficult cases, sometimes will not be able

to tell what specialist he should consult in case he wants to consult one. It will often require two and three specialists, who in turn will give him their opinion for which they will charge. Naturally such multiple examinations are very expensive. If it yields a good result, it will be satisfactory; if it does not, it will make the patient and the doctor disgruntled.

I have seen cases in which I was told that a man has seen, in succession, a number of specialists. For instance, a man who came to me with some trouble culminating in the loss of vision, following an injury. His physician was puzzled. He had seen a nerve specialist who sent him to the roentgenologist, who again after taking two pictures of the skull, without knowing much of the case, sent him back to a medical man, who again sent him to an eye specialist. This eye specialist referred him to a surgeon, who found it necessary to send him back again to a neurologist, and to his roentgenologist in order to get a better diagnosis. After that he called on me, and when I suggested this kind of co-operative diagnosis, after some hesitation, he said, "I have paid so and so many times $25.00 for each of these examinations; could I not save some money by showing you these pictures and giving you the opinion of these men?" The expense of his examinations was exorbitant and had absolutely no value. A co-operative diagnosis would have spared the man time and money.

The method of this co-operative diagnosis, as I said before, is very old abroad. At the clinics of the universities of Europe, especially in Austria and Germany, the professors make use of all the expert opinions of all the co-ordinate clinics of the universities free of charge, for this co-operative diagnosis.

When I was a student and later while working in a clinic, we called for the examination of our cases in our department the first assistants of the other clinics, who were only too anxious to learn and study in our department the diagnosis, and in their written opinions we had often all the detailed examinations of our cases. They lacked, however, one very important thing, in which I think, the method I have described before, excels, and which we are using, namely, the conferences and consultations, and they are the leading spirit of the diagnosis. It seems to me that in future medical diagnosis this method will play a very important role.

SOME NEW AND NONOFFICIAL REMEDIES.*

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In these days of the automobile, the aeroplane, and the submarine, rapid progress does not surprise. Few, however, even of the medical profession realize what great progress has been made in the materia medica even within the last few years. The average practitioner, I fear, has been too busy with practice to appreciate at their full value the improvements that have been made within the last decade. Furthermore, the propaganda against proprietary medicine, necessary as it has been, has brought with it the danger of throwing out the grains of value with the bushel of chaff.

Having been invited by the members of this society, who evidently appreciate the progress that has been made, to speak on the newer remedies, it seemed to me that the best way of presenting them would be to call attention to some of those agents, contained in "New and Nonofficial Remedies,"[1] that seem interesting to me or that I am acquainted with, eliminating from this discussion animal extracts, sera and vaccines, as well as those agents that are too well known to require special comment here, as e. g., phenolphthalein, theobromine, epinephrin or salvarsan.

NEW REMEDIES CHARACTERIZED BY ELIMINATION OF BAD TASTE AND OF LOCAL IRRITANT ACTION.

One of the most prominent tendencies of the newer materia medica lies in the direction of eliminating bad taste and local irritant action.

No longer is it necessary to offend the taste and to derange the stomach by giving, as antidiarrheal, tannic acid or one of the vegetable astringents. The tannate of albumin—*tannalbin*—is tannic acid, whose affinity for proteids has been satisfied before it is put into the stomach, thereby eliminating action upon this organ. It reaches the intestine in probably the same form in which tannic acid given uncombined would reach it, namely in combination with proteid, from which combination the tannic acid is slowly split off on digestion of the proteid. The

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dose of this light brown, odorless and tasteless powder is rather large—1 to 4 gm. (15 to 60 grains) for adults, and even infants may get as much as 0.5 gm. (8 grains). It is so inoffensive that it may readily be administered to the little ones mixed with food.

Creosote carbonate is so much easier to take than creosote, and acts like it, excepting as far as influence upon the stomach is concerned, that it ought to be generally preferred to the crude drug. It is an excellent expectorant in bronchitis with profuse secretion and in tuberculosis, given in drop dosage progressively increased up to 30 or more drops three times a day after meals; best administered shaken up with milk, coffee or wine.

Betanaphthol benzoate probably deserves to supersede betanaphthol as an intestinal antiseptic, at least in pediatrics, as it is insoluble until it arrives in the intestine, therefore is tasteless and free from irritant action upon the stomach. I have seen betanaphthol produce vomiting in a child. Betanaphthol benzoate may be given to adults in 0.5 gm. (8 grains) doses; maximum single dose is placed at 1 gm. (15 grains) daily; maximum daily dose at 4 gm. (60 grains). To children it could be administered in the form of sweet tablets.

When iodides disagree with the stomach, we may entirely circumvent action upon the stomach by giving *sajodin*, which is an insoluble soap of an iodized fat that becomes digested in the intestine and after absorption yields iodide to the system. Of course, it is slower in developing its action than is potassium iodide and it probably is also feebler, containing as it does only one-third as much iodide. However, the ease with which it may be given compensates for the latter defect; and, by giving two or three times as much as we would give of the iodide, we can obtain the same results, even to the extent of producing iodism. Have used it for the last few years, rather extensively and with satisfaction as an expectorant in children, to loosen up a tight cough, giving it in doses of 0.06 gm. (1 gr.) every 2 to 4 hours in form of sweet tablets, which are as pleasant as real candy (Fantus[2]).

Am less certain of the value of *Sabromin*, the bromine compound analogous to sajodin, it having been shown by Ellinger & Kotake[3] that its distribution in the system differs from that of bromides in that it accumulates in the fatty tissues, while bromides accumulate in the fluids of the body. It may, however, be used with expectancy of some results when bromide treatment is indicated but cannot be employed in other form because of gustatory or of gastric hypersensitiveness on the part of the patient. Have a number of nervous patients who have been taking it for months or years in doses of 0.30 to 0.60 gm. (5 to 10 grains) three or four times daily with results satisfactory to them. In one of these patients the same dose of potassium bromide produces coryza, while she can take sabromin without ill effect.

Aspirin, or acetylsalicylic acid, is probably too well known to require discussion here. *Salophen*, however, which is a salol-like combination of phenacetin and salicylic acid, deserves to be better known. As it is broken up in the intestine, it has the analgesic and antipyretic properties of its constituents with the additional action of an intestinal antiseptic. It is at the same time free from taste and from tendency to produce gastric irritation, which cannot be said of aspirin. Its dose is from 0.3 to 1 gm. (5 to 15 grains) in powder, cachet or capsules. Have used it extensively and with satisfaction in dose of 0.06 gm. (1 grain) every two hours in form of sweet tablets (Fantus, l. c.) in the minor fevers of childhood. In cases in which the depressant action of the phenacetin in the beforementioned compound may seem objectionable, *Saloquinine*, a salicylic ester of quinine, may be used in the same manner and dosage.

Our old friend quinine is no longer one of the most difficult medicines to give to children. Euquinine, meaning "good quinine," has been called the "children's quinine"; but *aristoquin* is, as its name indicates, better, i. e., less bitter still. It is quinine carbonate, so tasteless that it is easily disguised, yet sufficiently absorbed to give quinine action (Dreser[4]). One grain of it is easily given in form of a perfectly delicious 5-grain chocolate tablet (Fantus, l. c.), especially if a trace of sodium bicarbonate is added. Have used it in this form with some satisfaction in a number of cases of whooping cough.

NEWER REMEDIES CHARACTERIZED BY GREATER ACTIVITY AS COMPARED WITH TOXICITY.

Still more important are the results of modern research on drugs that lead to greater safety in

medication. To increase the distance that separates therapeutic from toxic dose means increased efficiency, as well as a greater safety.

Veronal, probably now the most popular of all hypnotics, acts in dose of 0.30 to 0.50 gm. (5 to 8 grains). Its fatal dose is about 5.0 gm. (75 grains). *Adalin*, which is much less soluble and for this reason must be given about two hours before going to bed, acts as hypnotic in doses of 0.5 to 1.0 gm. (8 to 15 grains), but has failed to kill in a dose of 17 gm. (255 grains), which was taken with suicidal intent (Hirsch-Gereuth[5]). This dose caused deep sleep for three days and was followed by complete recovery in five days. Adalin is therefore a good hypnotic, but not suitable for suicidal purpose. That it is, however, not perfectly harmless—no active hypnotic could be—is shown by the case reported by Siebelt,[6] in which 2 gm. of adalin given to a healthy man 37 years old produced delirium, loss of consciousness, rapid respiration, and small quick pulse, followed by recovery.

Particularly marked has been progress in connection with local anesthetics (Kochmann[7]), among which *novocain* seems to be at present the agent of choice. It can be boiled without deterioration, is free from irritant action in solution up to 5 per cent. A solution of 10 per cent. strength causes slight irritation, just as any other salt solution of that strength would. Its toxicity is remarkably slight. As much as 200 mils.* of a 1 per cent. solution containing 2 gm. (30 grains) has been injected without disagreeable results, excepting occasional vomiting. It is generally used in solution of 0.5 and 2 per cent. The main disadvantage of this anesthetic is that its duration is decidedly shorter than that of cocaine. The period of available anesthesia can, however, be prolonged by the addition of epinephrin. It has furthermore been shown (Hoffman[8]), that the addition of potassium sulphate increases the anesthetic power of novocain by about 75 per cent. without adding to the toxicity, so that the following solution may be recommended:

℞

Novocainae	0.25-0.50 gm.
Potassii sulphatis	0.46 gm.
Sodii chloridi	0.72 gm.
Aquæ q. s. ad.....	100.00 mils.

*Equivalent of cc. to be used in the new Pharmacopœia.

Just before using add 12 drops of 1 pro mille epinephrin solution.

Quinine and Urea Hydrochloride is a remarkably soluble quinine combination, dissolving in its own weight of water. It is furthermore remarkable in producing a most lasting anesthesia, which in some cases has continued for several days. It is also the best salt for subcutaneous administration of quinine in malaria. Its chief disadvantage is its tendency to produce fibrous induration, which it is claimed can be avoided by using solutions as dilute as 0.25 per cent. For application to mucous membranes it is used in solutions of 10 to 20 per cent.

Anesthesin is a local anesthetic likewise quite free from toxicity, that because of its insolubility cannot be used by injection, but which for the same reason has a very prolonged effect when used as a dusting powder in the treatment of painful wounds and ulcers, either pure or diluted. It is much less irritant than orthoform. This remedy is also useful in the treatment of gastric pain, especially that due to ulcer and cancer, as well as for the relief of vomiting in doses of 0.3 to 0.5 gm. (5 to 8 grains). Sweet tablets of anesthesin (Fantus[2]) slowly dissolved in the mouth produce a well defined and rather lasting anesthesia of the mouth and throat, an action that may be of value in the treatment of sore throat.

In the treatment of indolent ulcers, *Scarlet red* is of decided value. When the milder stimulants to healing, such as balsam of peru, prove insufficient, this irritant is likely to accomplish satisfactory results in stimulating proliferation of epithelial cells. One must be careful not to use it very freely. It should be applied thinly over the surface of the ulcer, unless the ulcer is a large one, when it should be applied to the epithelial margin only. It may be left undisturbed for several days, when the application may be repeated. Continuous application for many days causes inflammation of the ulcer. Careless application, so that some of it was smeared over healthy skin, has produced eczema in a varicose leg of one of my patients.

The group of coal tar analgesics has been enriched by the introduction of *pyramidon*. It is an antipyrine derivative, soluble in water, almost tasteless, acting three or four times as strongly as antipyrine, and while slower in producing the

effect, is more prolonged in its action. It is active in doses of 0.25 to 0.30 gm. (4 to 5 grains), its maximum doses being 0.5 gm. (8 grains) per dose or 1.5 gm. (23 grains) per day.

Erythrol tetranitrate is a vaso-dilator of more prolonged action than nitroglycerin, hence more useful than the latter as prophylactic for anginal pain. Its dose is 0.03 to 0.06 gm. (0.5 to 1 grain). It should be prescribed in form of 0.03 gm. (0.5 grain) tablets, the only form in which it is found upon the market. As the action lasts about four hours, the doses should be repeated at such intervals.

Papaverine, one of the opium alkaloids, not yet introduced into N. & N. R., has of late received considerable attention in European literature as a result of pharmacologic studies most especially by Pal[9], who found that it causes relaxation of involuntary musculature without producing narcosis. It has in consequence been used as antispasmodic in colics of various kinds, gastric, intestinal and uterine, to prevent threatened abortion, as well as for lowering of blood pressure. It is used as the hydrochloride in doses of 0.03 to 0.06 gm. (0.5 to 1 grain) two or three times a day. Holzknecht and Sgalitzer[10] have shown by means of Roentgenologic examinations that papaverine in doses of about 0.06 gm. (1 grain) may be used in differential diagnosis between pylorospasm and pyloric stenosis, as it removes the delay in evacuation due to spasm, while it increases the delay due to pyloric stenosis, just as it increases evacuation time of the normal stomach by producing muscular relaxation. This, of course, means that it is a valuable remedy in the treatment of pylorospasm.

SOME NEWER SPECIFICS.

The most important recent contribution to therapeutics, however, has been the development of some new specifics, to which I next wish to call attention.

Salvarsan has been heralded sufficiently to be passed with mere mention. It may not be sufficiently well known, however, that *Neosalvarsan* is a much more soluble form of salvarsan, which lends itself so readily to administration that it can be given to office patients. As the new form is somewhat weaker than the old, somewhat larger dosage is necessary. It is marketed in sealed tubes of 0.15 gm. each, which is considered a child's dose, and in multiples of that quantity up to 0.9 gm., which is the maximum adult dose. The average dose for men is 0.75 gm., for women 0.60 gm. Even the largest dose may be injected dissolved in 2 mils. of water, which should be distilled water, freshly boiled and permitted to cool. This is poured into the ampule in which the remedy is furnished, and solution is favored by stirring with the glass rod provided with the remedy; having, of course, previously sterilized the glass rod by heating it and then permitting it to cool. The solution is then drawn up into an all-glass syringe. Having made the vein prominent by constriction and applied tincture of iodine to the place of puncture, the needle is introduced into the vein. The sign that the needle has entered the vein is the appearance of blood in the syringe. Now the constriction is loosened and the injection given. Should the patient complain of "burning," the injection should at once be stopped and the needle be withdrawn, as it means that the fluid is being injected outside of the vein, which will later produce pain and infiltration. The needle should then be introduced into another vein. (Seyfarth.[11])

Emetine (p. 107), one of the alkaloids of ipecac, has been shown by Vedder[12] to have a specific action against amebæ, an observation that was seized upon by Rogers[13] to explain the antidysenteric value of ipecac, and to endeavor to obtain better results by the subcutaneous administration of the alkaloid, thereby circumventing the difficulty of having the medicine retained by the stomach. Using 0.03 gm. (0.5 grain) dose, Rogers and many others have obtained remarkable results in amebic dysentery and even in amebic liver abscess in its early stages. Most recently, since it has been claimed that pyorrhea alveolaris is due to amebæ, emetine has been tried in the treatment of this condition with alleged good results, even when given as claimed by Bass and Johns[4] in form of Alcresta ipecac, which has recently been accepted by the Council on Pharmacy and Chemistry, but is not yet to be found in N. & N. R. (1915). Alcresta ipecac is a combination of the ipecac alkaloids with an especially prepared fuller's earth, which was first made by John Uri Lloyd at my suggestion. This, like other alkaloidal fuller's earth compounds, is quite tasteless and insoluble in acid liquids; it

may therefore be expected to pass through the stomach without being acted upon and without acting upon it. Hence, the emetine combination ought to be non-emetic, which it proved to be. As the fuller's earth combination is decomposed by alkalies, I hoped that it would unfold its activity in the intestine. In this I was disappointed, as the compound proved quite inactive even when given in enormous doses to animals. It likewise seemed to be inactive against infusoria. I therefore cannot help being somewhat skeptical regarding Bass and John's (l. c.) results with Alcresta ipecac, though, of course, it is not beyond the range of possibility that these amebæ may be so susceptible to emetine as to succumb to the trace of emetine liberated from this compound in the intestine.

Atophan is a most interesting agent of apparently specific action. It has the power of greatly increasing the elimination of uric acid. Though salicylic acid increases the elimination of uric acid probably in a similar way (Frank & Pietrulla[15]), it is overshadowed in this power by the quinolin carbonic acids, most especially by the phenyl combination (Nicolaier and Dohrn[16]), to which the name atophan has been applied. This compound has been shown to increase the elimination of uric acid by 30 to 300 per cent. That this increased elimination is not due to an increased production has been shown by the fact that there is a diminution in the uric acid content of the blood (Bass[17]), and that phosphoric acid elimination is not increased, which would be the case if there were increased destruction of nucleo-proteids. Its action, as far as uric acid metabolism is concerned, seems to be limited to transferring the uric acid from the blood to the urine, acting probably upon the kidney tubules (Weintrand[18], Haskins[19]). The increased elimination lasts six to eight hours, is followed by a period of decreased elimination of uric acid, and finally by a gradual return to the normal. As a quinoline derivative, it has in addition antipyretic, analgesic and antiphlogistic properties; and some of the favorable clinical results obtained from it in gout, in rheumatism, and in a variety of other inflammations may have been due to these actions (Starkenstein & Wiechowski[20]). Atophan is especially indicated in acute gout. It often checks the attack completely within a few hours, if given at the very beginning of the paroxysm. If given for prolonged periods, in doses of 0.5 to 1.0 gm. three times a day, it prevents attacks; but it seems to be of little value for the removal of tophi. As the urine eliminated under its action is so rich in urates as to be turbid when passed or to become so shortly thereafter, it is contraindicated in nephrolithiasis. For the same reason it is necessary to give, during its administration, large quantities of water, to which one-half teaspoonful of baking soda should be added several times daily.

Atophan is an almost insoluble substance of biting taste which is perhaps best dispensed in 0.5 gm. tablets, that are made so as to disintegrate readily in water. One or two of these may be used three times daily after meals. The chief untoward effects noted under its administration are abdominal pain, diarrhea, and skin eruptions resembling those produced by antipyrin. *Novatophan* is an improved, practically tasteless modification of atophan claimed to have the same activity.

A new near-specific that has not yet been included in N. & N. R. is *optochin*, "best quinine," believed by its namers to possess the virtues of quinine to a superlative degree. The chemical name of this substance is ethylhydrocuprein. Introduced as a specific in pneumococcus infection by J. Morgenroth[21], who showed that it is able to save mice from death by fatal doses of pneumococci, it was at first found disappointing in human pneumonia, perhaps because too much was expected of it. Since then it has been shown by quite a number of observers that, if perhaps not absolutely specific, it is still the best remedy yet found against pneumococcus infections. It seems to be most valuable in pneumococcus conjunctivitis, especially in ulcus serpens corneæ (Goldschmidt[22], Schur [23]). Lescke[24] claims that it gives specific results in pneumococcus sore throat when given in 0.5 gm. (8 grain) doses in cachets three times daily. A. Fraenkel[25] reports 13 cases of lobar pneumonia with but one death. In the others, improvement could be observed within 12 hours; crisis or lysis occurred on the second to fifth day. To get best results, early administration is required. The case that died did not come under treatment until the fifth day. It is claimed to exceed quinine in antimalarial power. The chief untoward result obtained from it has been transient amblyopia, to avoid which

the daily dose should not exceed 1.5 gm. (23 grains). In these days of superdreadnoughts, shall we yet have a superoptochin?

In conclusion, I wish to call attention to the fact that, while no claim is made that all the agents described in it are valuable, the 1915 edition of "New and Nonofficial Remedies" contains authoritative information on a great many other useful remedies, information that cannot be found anywhere else. It is a book no progressive physician can afford to be without.

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TONSIL TECHNIQUE.

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LA SALLE, ILL.

The tonsils offer many phases for consideration. In this paper we will eliminate the much-mooted matter of function, also neglect pathology and pathologic physiology, assuming as a premise that there are tonsils which should be removed.

May we first clearly differentiate tonsillectomy from tonsillotomy?

Tonsillectomy means an enucleation, *i. e.*, removing the tonsil in its capsule.

Tonsillotomy refers to an obsolete, irrational, unskilful procedure of amputating the protruding portion of hypertrophied or hyperplastic tonsils. There is no reason for doing a tonsillotomy and every reason for not doing it. Nearly every tonsil that needs operation contains more or less pus. By the very nature of the tonsils they can free themselves to a greater or less degree of accumulations. When this function becomes impeded absorption of toxins and bacteria to the venous and lymph streams is begun. Now, when the top of a tonsil is amputated there is a formation over the cut surface of a dense resistant scar tissue acting the same as a scar. It seals that surface tight. Crypts that formerly could be emptied are converted into pus pockets, abscesses, if you please, without drainage. The result is an increased systemic intoxication with a possible added bacteremia. Diseased lobes, tags and stumps remaining defeat the whole object of the operation.

Tonsillectomy is a major procedure and when done well is not easy. It demands some previous training and average skill and judgment. That the work is frequently bungled is evidenced by the vast number of deformed fauces, hypertrophic tonsil stumps and tags. An abdominal error can be sewed up; throats are open for inspection. The most experienced operators have "bad luck" occasionally. However, should one have a series of failures in which the pillars are mutilated, in which there are diseased tags or lobes of the tonsil left, or in which all cases give considerable bleeding, it is prima facie evidence of wrong technique.

What constitutes good technique? Any procedure which will enucleate the tonsils with the least damage to the pillars and which will give minimum bleeding and no after bleeding.

In an article by Freer last year he points to two structures which each tonsil operator should bear in mind. As the tonsil lies in its fossa between two pillars, budging over the superior pole from pillar to pillar will be found the plica semilunaris. H. W. Boettcher of Chicago dubbed this structure the prepuce of the tonsil. Under this prepuce lies the upper lobe which frequently extends well up into the soft palate. In doing an enucleation the dissection is best started by puncturing the plica. The superior pole is then easily freed and shelled out first. Allowing this portion of the tonsil to remain, as frequently occurs, walled in by the pillars and covered over by the plica, the cut end soon is sealed by scar tissue. This is the usual site of peritonsillar abscess. A diseased sealed in upper tonsil lobe is not an infrequent nidus, even though the rest of the tonsil is out.

At the lower pole of the tonsil is a similar structure bulging from pillar to pillar over the tonsil, known as the plica triangularis. At about the junction of the middle with the lower third of the pillars this structure is encountered. One will note that the attachment of the structure to the anterior pillar is very firm and offers considerable resistance. To secure the lower pole of the tonsil it is either necessary to cut the plica from the pillar or dissect the tonsil free from the plica. Freer recommends this later procedure to save the plica as an epithelial graft to hasten the healing of the emptied fossa.

In order to demonstrate these plicæ the tonsil must be picked up from its bed and these membranes put on a stretch. The difficulty encountered with a tenaculum forcep for this purpose is marked in submerged tonsils. The prongs invariably pierce the pillars. It then becomes difficult to differentiate land marks. For large protruding tonsils the tenaculum offers no disadvantage. For picking up the tonsil Boettcher devised a two-pronged right-angled hook. By piercing the tonsil with the hook in its upper third getting a good bite, then giving the hook a quarter turn the tonsil is easily lifted from its bed and the upper plica put on a stretch. In this position the plica is seen as a pale pinkish membrane and is easily punctured for starting the dissection. In using the hook the operator should not use too much traction.

With the plica cut and the upper pole exposed the tonsil can be shelled out complete in its capsule with the finger, so loose are its attachments to the fossa except in old chronic cases. Boettcher recognized this fact and devised the curved blunt pointed tonsil scissors with semi-sharp outer edges. After lifting the tonsil from its bed with the hook Boettcher makes a clip in the prepuce with the scissors, after which they are closed and used as a blunt dissector shelling the tonsil free from the pillars. The reasons for blunt dissection are three fold.

First.—Ordinary tonsils can be shelled out with the index finger and with a blunt edge one also keeps between tissue planes.

Second.—By virtue of working between tissue planes there is a decreased danger of damaging the pillars or cutting too deeply.

Third.—By laboratory experiments and by actual observation blunt instruments cause less bleeding than sharp ones. With a blunt dissection the field is less likely to be obscured by blood.

When the tonsil is free from its bed it is an easy matter to place a wire snare and crush the tonsil from its base. Crushing is preferred to cutting because of less hemorrhage.

In placing the snare there are two factors to keep in mind. One is to gently rock the wire, while retracting the tonsil with the hook, so that it falls between the tonsil and pillars and does not incorporate the edge of either pillar in the grasp. The other factor is the uvula. The safest way to place the snare is to direct the stylet into the apex of the fossa when the loop will be easily worked under the pillars and the uvula is not likely to be caught, but, at the best this appendage has a peculiar faculty of getting entangled. It probably does no harm to snip off a piece, yet it is doing that which is not supposed to be done. To overcome this, Boettcher devised his uvula holder with which the anesthetizer with his free hand gently retracts the uvula from the field which also aids the operator to locate and pierce the prepuce. There is a little trick on the part of the anesthetist in managing the holder, whereby he places the pillars on a stretch yet does not tear the uvula or get in the way of the operator. One must be sure the uvula holder is attached when closing the snare.

It has been learned by bitter experience not to start the second tonsil until the bleeding from the first is checked for the reason the field is hidden, the patient coughs, gasps and gurgles, making it difficult to pick up the tonsil alone or dissect it free without doing damage.

There is no doubt that the majority of deformed fauces resulting from tonsillectomy is due to the operator attempting to work in a bloody field.

From observation of over 2,000 tonsil cases the time to stop bleeding and prevent further trouble is while the patient is still asleep on the operating table. At this time it is easy, later it is more difficult. At the Illinois Charitable Eye and Ear Infirmary, Chicago, where there are from 4 to 14 tonsil cases operated on every day, it is an unwritten law of the institution that each case must be dry before being put to bed. In over 14 months of service at this institution the writer knows of but two cases in that period that needed

any attention for bleeding and in these the bleeding was no worse than that the average operator pays no attention to.

In any other branch of surgery a bleeding point is immediately clamped and tied off. With a curved pair of artery forceps it is not difficult to pick up a bleeding point in the tonsillar fossa and if necessary slip a loop of ligature over the forceps and tie it.

Adults invariably bleed more than children because of greater vascularity and dilatation from chronicity; also that the amygdalae are often bound down more securely from scar tissue necessitating more trauma for enucleation. It is not unusual to place three or four hemostats to hold back bleeding in adults, but this procedure insures no bleeding and scarcely any oozing after return to bed.

An occasional source of bleeding is found from tags left attached to the pillars. Too much traction on a rotten friable tonsil is most certain to lacerate it so that portions fail to be secured in the bite of the snare wire. These tags should be picked up with the tonsil hook and bit off with the snare for two reasons. They invariably ooze for some hours and also are quite likely to be diseased.

Anomalies are a source of danger. The tonsil gets its blood supply from the ascending palatine (branch of facial) tonsilar branches of the facial, ascending pharyngeal (branch of exterior carotid) and dorsalis linguae (branch of lingual). The ascending palatine is in direct relation with the tonsillar fossae. It is not impossible for this vessel to be unusually large nor is it impossible for the ascending pharyngeal, facial or lingual to be out of their usual course. It is not at all unusual for the tonsillar arteries to be dilated. The carotid may be out of its course or an enlarged tonsil may push into relation with the carotid sheath. An example of each has come within the writer's observation. A sharp dissection with knife or scissors in a bloody field would have been hazardous.

For the last few years one hears much about the Sleuder instrument and operation. The writer has had the opportunity of using this instrument and to observe the results of the procedure in the hands of experts with the conclusion that unless one has done hundreds of Sleuderizations he is totally unfitted for the operation. There are so many damaged pillars that the instrument has been dubbed the pillaratome. Large protruding loosely attached tonsils offer but little difficulty, the submerged, cicatricial, bridged over or bound down type is where the damage is done even by those with a vast experience with the instrument.

It is quite uncalled for before this association to discuss further the tonsillotome except to again bring to mind a recognized fact that when the tops of diseased tonsils are amputated the resulting cicatrix pens up pus pockets that formerly could empty themselves. In short tonsillotomy makes a bad matter worse.

In the same category falls the tonsil punch which usually accomplishes the same unsatisfactory result of tags, stumps and penned up pus pockets for future trouble.

One can hardly discuss an operation without a word about anesthesia. If there are no contraindications the patient should be anesthetized to a point of abolition of pharyngeal reflexes. With these abolished the operator can do the work in half the time with no damage and less danger than when the patient is half down.

In those cases that need tonsillectomy but present absolute contraindications to general anesthesia we have to resort to cocaine and its derivatives. Injection of cocaine is perilous. Painting the pillars with a 10 per cent. solution and then injecting the pillars with 0.5 per cent. novocain combined with a little adrenalin gives very good results.

To epitomize.—The tonsils, if operated on at all, should be enucleated in their capsule.

Enucleations should be done by working between the tissue planes, separating the capsule of the tonsil from its bed.

Keeping between the tissue planes is more easily accomplished with a blunt instrument than with a sharp one.

Any continued bleeding is dangerous and should be prevented. Tonsil cases sometimes bleed alarmingly and dangerously.

All alarm and danger are reduced by placing hemostats on bleeding points at the time of operation.

THE VALUE OF X-RAY EXAMINATION IN PULMONARY DISEASE FROM THE STANDPOINT OF THE GENERAL PRACTITIONER.*

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The conservative physician and surgeon asks the question "How accurate or how reliable are the findings obtained by x-ray examinations of the pulmonary areas?" He also asks, "What lesions can be demonstrated by this method of examination?" There are many progressive diagnosticians who wonder how far they may go in depending on this newer method of physical examination. There are extremists who go too far in their expectations, as well as those who are unconvinced of its value, believing in most instances, that the actual knowledge gained is insufficient to warrant its use as a routine procedure in all of their cases in which pulmonary changes are in question. There are still others who feel that their fingers, ears and eyes are all that they need in detecting abnormal lung changes, so that the x-ray examination is superfluous and that there is no need to send their patients to the roentgenologist who so often refutes their findings. Others make extended use of this aid and include it in all complete examinations of their pulmonary cases.

There are many careful and painstaking physicians who have had the experience in certain of their cases of observing a great discrepancy between their physical findings and the evidences obtained on the x-ray screen and plate, and this in spite of every effort to detect abnormal breath sounds, to elicit percussion notes, etc., in a patient whose complaint directs particular attention to the lungs. They may have failed to find any signs that would indicate definite pathological changes, so that their surprise is great when abnormal shadows are noted which indicate lesions of the pulmonary structures. The report received from the x-ray examiner in some of these cases is difficult to believe, particularly in some of the supposedly negative cases, when it is stated that "marked evidence of fibrous tissue increase with small cavities, calcified glands, etc., is present." When such an experience occurs to the careful diagnostician he wonders if the x-ray evidence is reliable, but on further study learns that abnormal shadows occur only when increased tissue in the lung structures is present, and, the normal appearance being known, that pathological changes can be detected with positiveness. Several such experiences may serve to increase an already present skepticism, but if partially convinced, he begins to doubt his own ability to discover the actual lung condition present in these border line cases. If he is open-minded in his investigation, he learns that the x-ray examination is of distinct value as an aid to him in his physical diagnosis of the lungs.

The physician who refers his patient to the roentgenologist asks the question, "What procedure is regarded as a competent and thorough x-ray examination of the lungs," "Is the ordinary 'x-ray picture' sufficient for a diagnosis?" The answer to this may be stated to be "roentgenoscopic (commonly called fluoroscopic) and roentgenographic (incorrectly termed variously radiographic, skiagraphic, etc.), the roentgenograms to be made stereoscopically." Of the two forms just mentioned one supplements the other, some of the points of diagnostic importance being determined by the screen examination, while other points are obtained by inspection of the plates. It may be stated that a complete x-ray examination of the pulmonary areas has not been made unless the case has been studied by both the screen and the plate. There are certain points which no roentgenogram will tell the diagnostician, such as the action or excursion of the diaphragm or the aeration of the apices, etc., whereas there are other points that do not permit of exact interpretation on the screen, such as a slight infiltration in the hilum, etc.

Roentgenoscopic examinations should not be undertaken until certain precautions have been observed to protect both the examining physician and the patient. Special apparatus, which is so constructed as to minimize the danger of excessive x-ray exposure by a plentiful use of sheet lead around the x-ray tube, is necessary. A vertical roentgenoscope of proper design will enable the examiner to freely move the x-ray tube and the screen in vertical and horizontal directions to any part of the thorax and is provided with adjustable diaphragm shutters to narrow the field of illumination for the minute study of small areas of the lung.

*Read before Chicago Medical Society, Nov. 3, 1915.

The majority of pulmonary cases are examined in the upright position, this being adapted to most of the conditions that are encountered. At times, however, it is necessary to make use of the horizontal posture, as for instance, when patients are very weak or are unable to stand.

Stereoscopic roentgenograms are to be preferred to the ordinary single plate which registers merely flat projection shadows. The stereo method is superior in that it brings into proper position and relation the various pulmonary structures which cast their shadows on the plate and thus a more correct view of the lesion is obtained. (In this connection it should be noted that the tube should be shifted along the spine, not across it as is the usual practice.) While the stereoscopic method is superior to the ordinary single plate, it is true that some cases can be correctly diagnosed by the latter, but the double plate should be the rule. Automatic x-ray plate changing devices and tube shifters and the use of modern high powered generating apparatus with fast plates, now enable one to make both exposures of a stereoscopic set within the total elapsed time of one second. Under such conditions resulting shadows of the thoracic structures will be clearly defined and will be seen without the blurrings so often noted on the average lung plate.

The thorax as seen on the x-ray screen in the antero-posterior direction brings into view two bright areas, the right and left lungs, and a dark shadow between them, the latter representing the heart and the mediastinum. For descriptive purposes in diagnostic reports the lung fields may be subdivided into the apices, upper and lower lobes, the costo-phrenic angles and the hilum shadow. Since the advent of the x-ray, the normal lung has been studied by many investigators, and their conclusions are drawn from the findings of many series of normal cases carefully gone over by physical examination and pronounced to be without change. The contributions of Walsham, Williams and others gave us the foundation upon which later work has been done, the recent work of Dunham deserving commendation for being very thorough, although the work of the pioneers in pulmonary roentgenology still stands substantially correct as given by them. They have taught us that in the normal lung, the apices and the peripheral areas contain practically no shadows at all, and that as the hilum or root of the lung is approached, shadows are present which increase in size and density as we near the mediastinal area—these shadows being due to the numerous blood vessels, lymphatics and bronchial structures, all of which branch and ramify, frequently crossing one another, thus multiplying the density of the shadows. The normal diaphragm presents a smooth, sharply defined, rounded outline with the convexity directed upwards into the lung fields, the left diaphragm being at a lower level than is the one on the right side. Normally both costo-phrenic angles are very clear and are easily demonstrated on forced inspiration. This condition of the normal lung shadows has been confirmed by post-mortem examinations and by dissections carefully made as well as by x-ray studies of injected lung specimens filled with opaque media.

Regarding the information obtained on x-ray examination of the lungs, Crane, in a recent contribution on the subject, said, "It thus became apparent that until the x-ray was used the real status of the average healthy man was unknown. In cases of pulmonary disease also, the x-ray enables the examiner to detect infiltration, consolidation, cavity, enlarged, inflamed, caseated or calcified glands, peribronchial inflammation, bronchiectasis, infarct, abscess, inhesions, fibrosis, pneumokoniosis, pneumothorax and fluid in the plural sack whether free or encapsulated. The location and extent of these lesions may be defined by the x-ray with a certainty and rapidity beyond the power of the physical examination to maintain. The plate remains an unimpeachable record for reference or for comparison of cases."

One would be unwise to be swayed by the over-enthusiastic x-ray worker who makes extravagant claims for the infallibility of this method of diagnosis or by those who make statements to the effect that the x-ray is all sufficient in lung examinations. On the contrary, this method occupies no niche of infallibility nor does it displace other physical signs; it must be considered with them.

Having learned to know the appearance of the normal lung as revealed on the x-ray screen and plate, we find that certain pathological changes are demonstrated by departures and variations of the normal shadows. These changes are recognized by characteristic appearances of the lesion

which, in most cases, attacks the tissues in a different manner from other lesions. These abnormal shadows may range from a transparency, indicating a presence of air, to a density, signifying a more or less solid mass, in the shadow of which all usual lung structures may be obliterated.

Let us consider the various kinds of shadows found on the screen or plate and learn what each one indicates.

A transparent area means air to a greater or less amount according to size, position and delimitation of same; thus, a very large transparency when located on the outer side of the lung area denotes a large pneumothorax. In this case the edge of the more or less collapsed lung is seen crowded against the heart and mediastinal shadows sharply defined, and at times the shadows of the different lobes are easily detected. A small pneumothorax may be found anywhere from the diaphragm to the apex. This may occur on the anterior or posterior side of the lung, in which the transparent area contains some lung markings. A small area of transparency which is centrally placed and which has a denser shadow surrounding it, indicates a pulmonary cavity of small extent, the ring like density signifying infiltrated connective tissue. If a large cavity be present it is often less well outlined than a small one, but their hollow nature is plainly to be seen, particularly when the shadows are viewed by the stereoscopic plates. A very small transparency denotes a dilated bronchus or it may be a cross section of one of the vessels seen on end view. If many small transparent areas are present an emphysema is indicated particularly if these are seen to be bilateral. If the tissues surrounding a transparent area be infiltrated with calcium deposits, an especially well marked outline, ring like in character, will result. A cavity that is nearly full of fluid material will be recognized by the dense shadow below a transparent area whose lower border will be a horizontal line; this line will be seen to remain horizontal when the patient bends to the right or to the left, the transparency representing an air bubble floating on top of the fluid. Hydro- and pyopneumothorax are seen to be similar to a pneumothorax with the addition of the dense shadow of the effusion at the base of the transparent area. The effusion shadow is very dense and the upper border is a sharply defined horizontal line. If the patient be shaken from side to side this line will be seen to break up into ripples and splashings. If the patient be examined lying on his side, the horizontal line remains, but is now seen to be parallel with the long axis of the body. In this condition the heart and the mediastinal shadows are displaced to the opposite side. A very small effusion is easily detected by this means which would defy discovery by the usual methods.

Small light shadows may indicate a localized thickening of the pleura, a congestion, an atelectasis or an infiltration, but there is very little to distinguish between either of these conditions on the screen and plate. If the light shadow be found over the entire lung area and is of even density on both sides, an edema of the lung is indicated. A diffuse pleural thickening will give similar shadows. In these conditions the clearness of the image is less distinct then normal and the lung markings are seen to be hazy. Small heavier shadows may signify partial consolidation, small tumors, calcified glands, infarcts or fibrous tissue increase. Very small dense round shadows are due to calcified glands and are sometimes so dense as to give the appearance of shot. Partial consolidations are frequently found in the lower portions of one of the lobes. The shadow of a small tumor is similar to that of an infarct or a focal cirrhosis, but tumors are usually found near the hilum of the lung, while an infarct occurs near the periphery and a cirrhosis or fibrous tissue increase, when of small extent, is most often seen in the apex. A small dense shadow of even grade which occupies one of the costo-phrenic angles indicates a small pleural effusion.

Very large dark shadows of even grade indicate consolidation, gangrene, abscess or filled cavities, tumors or cysts. These pathological conditions have no definite points of differentiation to distinguish one from the other, but are of very definite assistance when considered with the other clinical and physical findings, and will often serve to indicate which one of these conditions is present.

A large dark shadow in the base of the lung indicates a pleural effusion and is seen to have a characteristic appearance. In this pathological condition the line of the diaphragm is lost, the

shadow of the effusion obliterating it. The upper border of the effusion varies in height according to the amount of effusion present and is indistinct, but its general direction is outward and upward toward the lateral chest wall. In a case of complete hydrothorax the entire side is occupied by a dense shadow in which no detail is seen, even the shadows of the ribs being obliterated, and the heart and mediastinal shadows displaced into the opposite side of the thorax.

Small tent-like shadows, when found on the arch of the diaphragm, indicate small pleuro-diaphragmatic adhesions. Large adhesions are sometimes found when unsuspected.

Pleural calcifications may be of small or large extent. When on the anterior or posterior portions of the pleura the shadow obtained will lie in the pulmonary area, but stereoscopic plates, or turning the patient laterally on the screen, will serve to show that the condition is pleural and not pulmonary. The ordinary single plate would leave the examiner at sea for it would be impossible to say that the shadow was not pulmonary.

Sarcoma of the lung has no particularly characteristic appearance, but usually gives a rounded mass outline, when primary, the shadow being of moderate density. A series of such cases were recently reported by Moore to have been diagnosed by means of the shadows noted on x-ray examination.

Primary carcinoma of the lung gives no pathognomonic appearance and is not often enough diagnosed by the x-ray, but should be thought of when an irregularly radiating mass shadow is obtained which involves the hilum and extends outwards from it most frequently in the upper lobes. An interesting case of bilateral ecchinococcus-cysts of the lung was reported by Albers-Schönberg in which the shadows were dense ball-like masses in or near the hilum of each lung, but no x-ray diagnosis was made. Fortunately, one of these cysts ruptured into a bronchus and was evacuated, and the microscopical diagnosis was made from the coughed up tissues, thus indicating that the shadows represented such cysts.

The x-ray screen examination is necessary to determine the position and the action of each half of the diaphragm, the extent of excursion on each side in ordinary and forced breathing, lameness or lagging of one diaphragm behind the other, the presence of adhesions to costal wall or to pericardium, regular or irregular outlines, and condition of the costo-phrenic angles as to their clearness. The diaphragm is sharply defined on both sides in emphysema, being a bilateral condition. It is even more sharply defined in pneumothorax, though it is noted to be on one side only when this is a unilateral condition. Its outline is indistinct in edema, in congestion and when a thickened pleura is present. The outline of the diaphragm is not seen in cases in which an effusion is present or in which there is a consolidation of a lower lobe. The action of the diaphragm is of importance, and must be carefully examined in order to discern a slight degree of restriction in movement which at times will give the clue to an early change. There are cases in which all lung findings, physical or clinical, are normal with the exception of a "lame" diaphragm in which the excursion may be only slightly restricted or greatly so, or at times immobilized. A slight restriction in action often indicates beginning pathological lung change on that side, possibly an early tuberculosis or a pneumonia or it may be a pleurisy. There may be lagging on the part of one diaphragm, this one being seen to follow behind its opposite.

An irregular outline of the diaphragm may be due to a pathological change below it and a high position of the right diaphragm may be caused by an enlarged liver which displaces it upwards; or the irregular outline may be seen to be due to the contraction of adhesions.. A high left diaphragm may be due to large amounts of gas in the stomach or in the splenic flexure of the colon or to a rudimentary eventration. Pericardial adhesions may also cause an irregular outline of the diaphragm. The amount of diaphragmatic excursion should be considerable, the normal full distance being about three inches. Limitation of this extent will suggest pathological pulmonary change on that side.

The right and left costo-phrenic angles are normally very clear and are easily seen on quiet breathing, though forced inspiration best demonstrates its condition; if cloudy or obliterated an effusion is present or a thickened pleura is indicated, or adhesions exist.

The apices of the lung must be examined to determine the state of aeration and freedom from "clouding." Normally the apices are clear and are

seen to light up on coughing: this phenomenon should be clearly demonstrated in each case, a manoeuver brought to our attention by Kreuzfuchs. If one apex fails to light up or is seen to be less active than the other, it is an indication of lung change on that side. If a very slight difference is detected it may be a sign of early tuberculous involvement. One or both apices may be cloudy or dull to the presence of cicatrical tissue which has invaded these areas. This usually indicates advanced changes and both apices may fail to light up if the change is bilateral.

That tuberculosis begins in the hilum is now generally accepted and is held to be an established fact, the process extending outwards and later reaches the apex and the periphery. But increased lung shadows do not always indicate tubercular involvement, as the heavy branching shadows extending from the hilum outwards and particularly if most marked in a downward direction, may denote a chronic bronchitis. An increased amount of sputum in the bronchial branches in such cases will serve to increase the density of the shadows. Increase in the shadows of the lungs is present in anthracosis or other dust inhalations, which is due to the heavier atomic weight of the material inhaled. The peribronchial glands when infiltrated, will result in increased shadows and are significant in cases of suspected tubercular involvement, a finding which is regarded by many as corroborative evidence of this lesion. Hazy or wooly outlines of these glandular increases is given as a positive sign of tubercular changes in the active stage. Chronic pulmonary tuberculosis is noted by the very dense shadows due to the enormous overgrowth of fibrous connective tissue which frequently contracts and may displace the surrounding viscera.

An oft repeated question is "Can incipient tuberculosis be demonstrated by an x-ray examination?" It depends partly upon our conception of what incipiency is. Many cases that are diagnosed clinically as incipient are found to be advanced when examined by this method. When shadows are found which represent tubercular pulmonary involvement the case is no longer an incipient one, even though the clinical aspect indicates it to be so. At times the only sign of incipient tuberculosis will be a lame diaphragm on the affected side or the hilum may be noted to be very slightly increased or that the peribronchial shadows have a wooly outline and are more in evidence than normal, or that one apex fails to light up as well as the other. There may be a slight increase of shadows on one side of the lung over the other, which is seen to involve the peripheral areas or the small finer branching shadows may extend upwards into the apices. These are the signs obtainable by means of x-ray examination which, when taken together and carefully considered, enable us often to diagnose incipient tuberculosis before it can be determined by any other method.

The recently revived treatment of pulmonary tuberculosis by means of artificial pneumothorax is easily studied and controlled by aid of the x-ray. The amount of lung collapse may be regulated and the question of how much gas is needed in each is learned by seeing the lung collapse to the required amount. Too little gas may defeat a cure, while too much may cause fatal termination, both of which accidents can be obviated and the procedure made safer, by roentgenoscopic aid, the surgeon or phthisiologist and the roentgenologist working together.

Regarding the referring of patients for this branch of medical consultation, Case in a recent article says:

"Surgeons can do much to discourage the desire of the layman to secure a copy of his 'photograph,' by a little care in the choice of words when discussing the use of the x-ray. A patient referred to the Roentgen department for an 'x-ray picture' or an 'x-ray photograph' of a part is, by suggestion, led to expect that when the work is completed he will have a right to a copy of the 'picture'; whereas a patient referred to the roentgen examining department for an 'x-ray study' or an 'x-ray examination,' will expect to learn some facts about himself without any thought of picture or photograph."

The general practitioner who has referred his patient for x-ray examination is entitled to a full detailed report of the findings together with whatever additional information is seen to bear upon the case, thus receiving the benefit of the roentgenologist's experience in such conditions. If the patient be examined by a skilled roentgenologist, the necessity for "seeing the picture" is lessened. It is not proper for pa-

tients to take the x-ray plates to their Doctor for him to see; the information revealed by these plates should be a direct communication between the roentgenologist and the Doctor, but not through the medium of the patient.

An x-ray examination is, in the strictest sense, a medical consultation and should be regarded as such by physician and patient. Thus the x-ray examination of patients becomes less of a picture-taking procedure and more of a medical service to be performed only by physicians having special training in this form of diagnosis.

There is no serious danger that this newer method of physical examination will give us less reason to become proficient in the older methods of percussion, palpation, auscultation, etc. These will not become a lost art through disuse, but on the contrary, the skill in physical diagnosis of chest lesions, which has been so wonderfully developed in the last century, will make still further advance through the stimulus afforded by a more extensive use of the x-ray in pulmonary examinations.

FOCAL INFECTIONS OF THE ACCESSORY NASAL SINUSES.*

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A general consideration of the subject of focal infections would be very interesting and in my opinion quite profitable, however, at this time, it is impossible to devote the time necessary for this purpose, therefore, I will merely speak in the most cursory manner of a few very important preliminary subjects.

The role which focal infections play is, I think, generally considered to be enormous. It is now possible to understand many conditions of altered metabolism which were previously closed books; also, small local infections, which would previously have been considered of no consequence, are now searched for in the most diligent manner, and it is my opinion that the final word will not be spoken in a large majority of chronic cases, as for example, most neurasthenics, and also in those people who have nothing the matter with them except that they have no ambition and do not feel well until a small previously unfound infection is discovered, drained and healed.

*Read before Englewood Branch, Chicago Medical Society, Oct. 5, 1915.

Before considering infections of the nasal sinuses it may be well to reflect for a moment on the bacteriology of the normal sinus. Formerly, it was thought that micro-organisms could at all times be found on the mucosa of the normal sinus. This, however, has been proven erroneous. At present it is well known that pathogenic micro-organisms are not present in a normal sinus. Even though a few find their way into a sinus it soon becomes sterile again because of first, the inhibitory power to the growth of pathogenic micro-organism of the secretion of the glands situated in the mucosa lining the sinuses, and second, the sweeping out motion of the cilia of the mucosa which continually wave toward the sinus ostium.[1]

I have been much interested in the location of focal infections which various men have been interested in. For instance, one will find the causation of all human ills in the tonsil and another in and around the roots of teeth and yet another in some other place. There is probably no doubt about the patient having trouble in these locations and the interesting thing to me is that on the removal of either of these troubles the patient recovers and the other point clears up; this is explainable I think as follows: The patient was able to combat both of the infections just enough to keep from being overwhelmed, but when one is removed all of the resistance on immunity can be directed to the one focus and the infection in the second focus overwhelmed. This, I think, explains why workers along very divergent lines will get good results, and because one patient clears up when his tonsils are removed, when some other with the same secondary condition clears up when his pyorrhea is cured, is no proof that the results would not have been the same if the treatment had been reversed. In my opinion the logical procedure in a given case is to find the most probable source and remove it, and if the condition is not cleared up then take the next in line—(I take it that we all have failures). Along this line I think it is not difficult to explain why patients who have nasal sinus lesions are less apt to get well with other procedures (i. e., tonsil removal, etc.), than if the cases were reversed. The sinuses are bone cavities lined with mucous membrane and are not perfectly drained in all positions of the body; also the drainage is through comparatively small ostii (with the possible ex-

ception of the ethmoid cells in which, however, the drainage may be very complicated), and there is very apt to be caries or necrosis or cholesteatoma formation and if these conditions were present they absolutely could not be healed until they had received proper treatment.

Focal infections of the nasal sinuses may cause either quite local troubles or general conditions.

Local Troubles.—Probably the most frequent local condition caused by sinus infection is headache. This may be very general, and I do not at this time have in mind the ache or pain caused by retention of pus in a given sinus, but that which is probably caused by reabsorption of toxins through the sinus walls into the cerebral circulation.[2] (Grunwald believes that chronic sinus suppuration affects the brain by disturbing the lymph circulation at the base of the cranium, while Robertson considers the reflex vasomotor stasis of blood in the meninges the cause).[3] This absorption may also cause sluggish mental action, which may go on to a distinct neurasthenia.

Not infrequently a patient is seen with a muscular or accommodative asthenopia or a contracted visual field which is probably caused by absorption of toxines from an infected sinus and this is proven by the fact that the trouble clears up when the infection receives proper attention. The sinuses usually causing this condition are the posterior ethmoid and sphenoid. Eye affections caused by maxillary or frontal infection are rare.

General Troubles.—Any general condition which may be caused by a focal infection may arise from nasal sinus disease. The most frequent conditions are the various varieties of arthritis. Very recently Hammond has given a very discouraging view of results to be expected in the treatment of chronic infectious arthritis by the removal of infections in the upper respiratory tract; however, in the discussion of his paper much optimism is shown.[4]

Hammond says: "The difficulty lies in determining with certainty that the focus which has been discovered is really the cause of the arthritis." This is the difficult point in the subject of focal infections and one should be quite sure of his ground before making a statement, and then if he is wrong he must not lose confidence in the role which focal infections may play in the causation of general disease.

For one to satisfy himself that any general trouble is caused by a lesion in the nasal sinuses will call for his full measure of diagnostic skill, and it is not sufficient ground on which to rule out sinus trouble to ask the patient whether they have any nose trouble, or to determine whether there is tenderness over the sinuses. As a rule one man has not the requisite skill necessary to search out points of infection over the entire body and here, if any place in the entire field of medicine, is the place for whole-souled teamwork.

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TREATMENT OF TETANUS.

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So much has been written in the past year upon the treatment of tetanus that I am a bit hesitant about reading this paper. However, if I can impress you all with the importance of prophylaxis, and the necessity for early and vigorous treatment after the disease has begun, I feel the object of this paper will be obtained.

Statistics have proven:

First. Tetanus is preventable. Frequently it can be stopped after it has developed, and it can be cured after it has become well established.

The most successful preventive treatment is by tetanus antitoxin. As a preventive measure this antitoxin ranks even higher than diphtheria antitoxin.

The kind of wounds likely to contain the tetanus bacillus are positively known. These include all wounds that may contain dirt, contaminated with manure, such as that from streets, stables or barns and even fields. Wounds by firecrackers, by gun shots, especially blank cartridges and by crushing machines. Street injuries that are not deep or perforating, but grinding and lacerating, are very likely to cause tetanus infection. Whenever a wound has been contaminated by street dirt or by objects that have been exposed to street or barn dirt, all foreign matter should be removed from the wound, even if to do so it becomes necessary to cut down on them under anesthesia.

Secondly, not only the open wound alone, but

the surrounding tissue as well should be painted with tincture of iodine; then the wound should be dressed with an antiseptic dressing of which a strong alcohol wet dressing is perhaps as good as any.

Thirdly, the patient should have an injection of fifteen hundred units of tetanus antitoxin. Of so great importance is this measure, that failure to administer it in any wound contracted in a manner which is favorable to the later deevlopment of tetanus should be considered culpable neglect. If the antitoxin is not at hand an injection within two or three days is permissible, providing an extra likelihood is present that tetanus may develop. A second immunizing injection upon the eighth or ninth day will absolutely prevent its development.

Fortunately within the last few years, the pathway along which the tetanus toxin is absorbed and travels has become quite definitely worked out. It is now generally admitted and proven that the toxin is absorbed through the motor nerve end plates, and travels primarily along the lymph spaces of the motor nerve to the posterior root ganglion, thence to the central nervous system. As proof of this various experimenters have proven that by dividing the fibers of the posterior root ganglion that the tetanic contractures remain localized or confined to the muscles supplied by the motor nerves below the division.

While the means of treating the disease have not been altered, the manner of carrying out the treatment varies in certain respects. Owing to the extreme toxicity of the tetanus toxin, any treatment to be of value must be carried out in a manner that will reach the toxin and neutralize it in whatever location it may be, as far as this is possible. Although numerous methods of treatment have been published with glowing accounts of the results obtained by their use, the tendency is to regard tetanus antitoxin as being far superior to all other means. Theoretically, tetanus antitoxin is the treatment of choice in these cases, although clinical observations do not always substantiate this. From recent observations it would seem that the cause of failure in the past has been due to the lack of understanding the channels along which the toxin passes and to giving the antitoxin in insufficient quantities.

To accomplish the desired effect the antitoxin should be given locally, intravenously and subdurally. I purposely omit subcutaneous injections of antitoxin primarily after the disease has begun owing to the fact that it is not totally absorbed for a period of three days. Owing to the extreme toxicity of the infection, the intravenous and subdural injections are the routes by which the toxin is quickest and best neutralized.

From the fact that the tetanus toxin passes up the nerve trunk or its lymph vessels, which supply the tissues involved, it is urged that antitoxin be injected locally directly into the nerve trunk. The direct injection of the nerve trunk can do no harm and probably does block a certain amount of toxin ascending which would not be reached as quickly in any other way. Since the tissues of the spinal cord and brain are chiefly effected, it has been suggested that from three to five thousand units of antitoxin be injected into the spinal canal. Although the spinal injection only comes in contact with the cord, the deeper portions are equally affected by the toxin. Owing to their danger intracerebral injections should not be attempted.

The amount of antitoxin that may be used without causing harmful symptoms seems to be without limit. An intravenous injection, throwing the antitoxin directly into the blood current, causes an immediate neutralization of all toxin present, and within a few hours of all toxin in the lymph and cellular fluids. The dose of the intravenous injection for an adult of average size should be fifteen thousand units, and if the expense is not too great and the serum is available, twenty-five thousand units would be better. The injection should be repeated every six to twelve hours during the first day, and every twelve hours after that time until the symptoms improve. This large amount of antitoxin is not given because there is a large amount of toxin in the body, but because, as only a small percentage of antitoxin passes out of the blood to the cellular fluids, it is necessary to have great antitoxic strength to quickly get the antitoxin in appreciable amounts to the cell.

Of late years two other forms of treatment have been before the profession, namely, the injections of magnesium sulphate and of phenol. Magnesium sulphate is injected in two ways, subcutaneously and into the spinal cord. It is not easy to discriminate between what is more and what is less beneficial in them. The subcutaneous method

is doubtless the safest and easiest. Owing to the frequent reports of death from collapse and respiratory failure, the intraspinal injections are too dangerous to be practical.

Subcutaneous injections are given by injecting 1 c. c. of a 25 per cent. solution for each 25 lbs. of body weight.

Bacelli's method is a subcutaneous injection of large doses of phenol. The results are most striking when carried out in the required doses and according to the author's technic. He uses a 2 to 3 per cent. solution in water, injecting from 60 to 80 grains daily. Following its injection. the nerve excitability is lessened and the temperature falls. Whether or not the good results are due to antitoxic property or in allaying the nervous excitability of the patient until immunity can be produced in the patient's body is not known; however, the improvement of symptoms and the good results obtained have proven that the treatment is of value.

During the course of the disease the patient's strength must be preserved by the use of sedatives in some form to give the required results. Nutrition must be maintained by means of a highly nutritious diet, given by mouth if possible, otherwise by nutrient enemata.

MOUTH HYGIENE AND ITS RELATION TO SYSTEMATIC DISEASES.*

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Mr. President, Ladies and Gentlemen: Possibly some of you are wondering how a mere dentist would have the temerity to talk to a gathering of physicians such as I see today and what he could have to say that would be of interest to you. I assure you that it surprises me as much as you to find myself occupying this position. I think it is more or less of an accident for which you have Dr. Harrison to blame. Some months ago Dr. Harrison asked me if I could attend this meeting and demonstrate to the Madison County Medical Society something of the nature of the calcareous deposits found upon the teeth of the workers in the lead smelter located in Collinsville. That sounded easy enough and gave me an excuse to get away from the routine of office work for an afternoon. Later, however, Dr. Harrison decided that I needed more exercise, so he asked me to prepare a paper on some subject which might be of interest to the medical profession. Now as writing papers has been the most neglected of my duties since leaving college and as I am sadly deficient in the experience of addressing physicians, it will be hard to foretell what will happen to me during the next fifteen minutes. I will try to make this operation as painless as possible. You see I have to tell you that it won't hurt a bit, as that is the one thing above all others that I always tell my audiences. My subject of "Mouth Hygiene and Its Relation to Systemic Diseases," offers a broad field for discussion; much broader than any one man is capable of mastering. But the fact that no one college knows all the best of our profession even theoretically and the further fact that no one man could master all of it in a life time, suggests that it is not uncomplimentary for me to assume that I might say some things which would be helpful.

Until recent years there had not been to my knowledge any real scientific effort to ascertain the importance of oral hygiene. But when once launched it grew by leaps and bounds as has probably no other reform movement of recent years.

Statistics show that 75 per cent. of the people make a failure of life, and after observation and research by some of the most brilliant men of our profession many have concluded that if this vast subject were taught by every teacher in the land up to the eighth grade, the children when they become men and women would reverse this deplorable state of affairs. The 25 per cent. of failures would represent that element where environment, poverty, accident, etc., would make for failure.

On what do they base this opinion? First, that we are a nation of sick people and sickness and efficiency represent the two extremes of failure and success. It would be difficult to find a man, woman or child who is not sick at some time during each year of their lives. Now combine this with the fact that about 90 per cent. have diseased and unclean mouths and the further fact that nearly all of the most common diseases are caused by diseased mouths, therefore preventable, and you are forced to the con-

*Read before the Madison County Medical Society, Aug. 6, 1915.

clusion that there is foundation for the foregoing opinion.

We have learned through the efforts of the research committee appointed by the National Dental Association, that a large per cent. of the pathological conditions of the body are due to oral infection. Dr. H. Vallow, of England, positively asserts that decayed teeth act as the invasion point in many cases of tuberculosis. I will briefly trace the method of infection as given by him. First, from the mouth through the submaxillary glands, the superficial and deep cervical glands in the mediastinum, thence to the bronchial glands and from these glands to the lungs.

Again, when the tonsils become infected from mouth infection due to carious teeth, pyorrhea pockets or filthy deposits, they no longer act as a barrier to infection but as culture media for various micro-organisms and toxins, which pass into the circulation. The infections from the mouth drain through the tonsils, then through the cervical lymphatics and empty into the large veins on the right side and the thoracic duct on the left side.

Rheumatism, muscular and articular, nephritis, neuritis, appendicitis or general septicemia may result. Systematic work of the medical clinic of the University of Minnesota in the field of mouth hygiene began over two years ago. All patients had a preliminary examination of the mouth to determine gross evidence of alveolar or dental infection. All patients giving such evidence were referred for study and relief of the mouth conditions, to the dental service. From Oct. 1, 1913, to Jan. 1, 1915, 565 cases were examined and admitted to the medical service. Of these 55 or 9.7 per cent. had serious pyorrhea, alveolar abscesses or both and were included as instances with evident relationship to systemic disease.

The most damaging of all forms of mouth disease I am compelled to believe from my observation and experience with it, is pyorrhea alveolaris or Riggs' disease. I will now pass to a consideration of its history. Some three thousand years ago, Mr. Aeneas of Troy, accompanied by a few true friends, settled upon the ruins of an old Etruscan city in Italy. They went into the real estate business and presently they had a flourishing village which they called Rome. The town more than equaled their expectations. The Etruscans who preceded the Romans suffered from pyorrhea. We know this because the museum at the Vatican contains pyorrheal teeth firmly fastened in gold retainers that were dug up during the archæological excavations upon the site of Etruria. There being no newspapers and magazines in those days, the sure cures for pyorrhea were not so well known as now. Consequently it would be reasonable to suppose that the Romans may also have had a touch of Riggs' disease. In fact, from the whispers which we have heard, the Romans had a touch of almost every disease on the calendar. Those old fellows were great on cures. They used charms, snakes, drugs, toad's blood, bones, and everything they could think of to make a specific. One of their sure cures was to lie in the grass at sunrise and bite a spreading adder in the face before he could bite you. If you tried it and failed you never suffered from pyorrhea again.

Now, gentlemen, for hundreds of years the race has suffered from this troublesome disease with little or no apparent relief. It has been the shadow upon the fair name of dentistry; we were helpless, as it were. Not until about seven years ago in my junior year at college was there a chair devoted to the treatment and study of it. Since that time wonderful progress has been made, and just last summer, working independently, two different sets of men, Drs. Bass and Johns of Tulane University, in New Orleans, and Drs. Smith and Barrett, of Philadelphia, succeeded in isolating the micro-organism which without doubt is a contributing cause of the disease. It is the endameba buccalis, which also is the protozoon found in dysentery.

The first signs of pyorrhea are a tendency of the gums to bleed easily, foul breath, accumulating of salivary calculus upon the necks of the teeth and finally a flow of pus from the gingival margins. The gums recede and the teeth loosen and there is being constantly passed into the stomach this putrid excrement from the gums. Is it any wonder that practically all of our patients who suffer from Riggs' disease give a history of indigestion and disorders peculiar to the stomach? These pockets and filthy recesses of the gums act as breeding places for numerous forms of disease germs, a veritable hot bed of in-

fection, and unsuspectingly the patient goes on allowing this agent, which is silently acting as the murderer who sneaks poisons in the victim's coffee, to possibly destroy indirectly their very life. And why, do you ask? Ignorance, gentlemen; nothing more, nothing less. For pyorrhea alveolaris is a preventable disease, how preventable it is only too bad that all cannot know.

Dr. Steadman, of London, England, in his lecture before the Section of Stomatology at the International Congress of Medicine in London, in 1914, states that pyorrhea is a predisposing cause of cancer of the mouth, throat and the entire alimentary canal and associated parts.

But you say this may be all very true, yet it seems that if it is the work of the dentist why bother the physician with it? Exactly, now we are coming to the point which should interest you. Education. Educating the public to a realization that general good health in many, many instances depends upon a healthy condition of the mouth, the gateway to the system. We have been pleased to speak of the medical and dental profession as the science of Medicine and Dentistry. What is a science? The Standard Dictionary defines it as exact or universal knowledge. Even the best educated man who has practiced twenty-five years has hardly reduced his practice to a real science. For hundreds of years we have been treating the ravages of the disease rather than the disease itself. We have been treating the effect rather than the cause. With our attention being called directly to the mouth, the gateway to the system, why have we allowed so many years to elapse before we have taken cognizance of the importance of mouth hygiene in its relation to the diseases of the whole body?

With the greater prestige enjoyed by physicians among the laity, your words and advice carry more weight with the average person than those of us as dentists. You can reach a class of people who come to us and are of the opinion when they do come that our interest and efforts to teach them along the lines of mouth hygiene ends when they pay their bill and our advice is for financial gain. Not so with you; they feel that as you receive no benefit in a financial way that you are doing it for their good alone and will heed well your words when you say, get your mouth in a sanitary and healthy condition. This is how the medical profession could help eradicate much of the misery and disease which is burdening these people of unclean mouths. This class I referred to do not know. Why not tell them that a clean mouth is the first of all requisites for progress in the art of healing. Let us teach the children to fear the effects accruing from a neglected mouth, and in time (I do not expect it for many years) the day will come when the hygiene of the mouth will be looked upon as the most necessary consideration for the body's health and well being.

INTESTINAL AUTOINTOXICATION.*

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Although not a pathological entity, intestinal autointoxication is readily recognized clinically, and recently it has been deemed an important etiological factor in many diseases, heretofore of obscure origin.

That the whole subject of autointoxication of intestinal origin is becoming increasingly important, is due to the stress and strain and irregular habits of modern civilization; to the fact that work is becoming irksome to more and more people; that one arises in the morning not feeling refreshed; that the "tired feeling" and general debility are so predominant, and that the spirit of indifference and laziness appears to be on the increase. These prevalent symptoms are not by any means always due to brain-fag or to overwork, age, or even to worry and habitual fear.

Autointoxication certainly is a more frequent condition than has usually been realized. It is a concomitant of many, if not most all, digestive disturbances, especially those of retention from impaired motility.

The failure of the body to eliminate waste is a foundational cause for many of the disturbances of health, which may be embraced under the term autointoxication of intestinal origin.

Although the complete etiology has not been established, especially in regard to the chemical and bacteriological changes which take place in the intestine under physiological and pathological conditions, yet enough is known to form a working basis for the physician.

*Read at meeting of Iroquois-Ford Medical Society, June 1, 1915.

The fact should be recognized that constipation alone is not always responsible for the symptoms of autointoxication. Some individuals are unaffected by prolonged retention of large quantities of feces; in others postponement by a few hours of the daily evacuation causes considerable discomfort. Some persons seem to become autointoxicated unless they have two or even three bowel movements daily.

In the process of intestinal digestion certain toxic bodies, namely, albumoses and leucomaines, are formed. The liver, as a rule, destroys these toxic bodies, but deficient hepatic function leads to their formation in excessive amounts, and their absorption into the circulation produces autointoxication. The digestive tract, skin, and especially the kidneys, are normally active in the elimination of these poisons; therefore, a torpid liver, a slugggish bowel, an inactive skin, or improperly functionating kidneys may each serve as etiological factors.

Overeating, especially the excessive ingestion of proteids, rapid eating, excessive eating of foods ill-adapted to individual digestive functions, adulterated foods, insufficient exercise, rushing to physical and mental labor immediately after meals and sedentary habits all tend to induce intestinal autointoxication.

There is no clinical evidence that the normal disintegration of normal food-stuffs produces intoxication within the intestines, or that the products of such disintegration, even when formed temporarily in excess, are toxic. Normally a certain amount of digestive fermentation and putrefaction is in operation, fermentation predominating. It is only when these processes are carried to excess, that toxic symptoms develop.

Some persons are naturally abnormally sensitive to certain poisons produced within the intestines, following the ingestion of particular articles of food. It is quite possible that these articles allow the bacteria, normally present in the intestines, to multiply with abnormal rapidity, or that they reduce the resistance which the flora of the intestines normally exerts against foreign invaders.

Acute stasis results only when intestinal obstruction is positive and is brought about by a pathological state, causing blocking or constriction, or by a complete intestinal paralysis from some interference with the neuro-muscular function of the bowel.

Chronic stasis may be caused by adhesions from localized peritonitis, due to gall-bladder or gall duct disease, pancreatic or retro-peritoneal disease, appendicitis, diverticulitis, ulcers, carcinoma, or pelvic disease; by megacolon, veils, or membranes in the ileocecal region, incompetency of the ileocecal valve, ptosis of the abdominal organs, especially of the colon, atony, pressure on the intestine, hernia, cicatrices, enteroliths, foreign bodies, or fecal impaction, spasm, as in dynamic ileus, dilated rectum, and by tight sphincter. Colitis may reasonably be suspected of causing or increasing stasis. Infiltration of the colon wall decreases its elasticity and contractibility and proportionally decreases the propulsive power.

Many diseased conditions are known to be either directly or indirectly caused by intestinal autointoxication. Atrophic cirrhosis of the liver has been too often attributed to alcoholism. Experiments show that products of fermentation and putrefaction, as well as toxins manufactured by intestinal bacteria, including the colon bacillus, can produce atrophic cirrhosis of the liver. Normally, the liver resists these poisons, but when enfeebled, or congenitally weak, it cannot cope with them and cirrhosis results.

Several cases have been described by English writers, in which periodic or cyclic attacks of severe vomiting with great prostration and fever were associated with constipation. While cyclic vomiting very often depends upon acidemia, there are cases where the conclusion must be that the cause is active intoxication in the portal area from absorption of intestinal toxins.

Forcheimer has observed pyorrhea alveolaris as a frequent symptom associated with chronic intestinal autointoxication. The latter condition improved under proper treatment of the former. Metchnikoff's experiments prove that arterial hypertension, later leading to actual arteriosclerosis, is a result of intestinal autointoxication. Cardiac and renal diseases are liable to be produced, especially in elderly people.

There is no doubt that pernicious anemia, and, perhaps, some cases of secondary and symptomatic anemia, are due to hemolytic agents of toxic nature absorbed from the alimentary tract.

Among metabolic disorders, which are caused

by intestinal autointoxication, are such affections as rheumatism, gout, diabetes and obesity. This statement is enforced by the frequent occurrence of constipation in these diseases.

Intestinal autointoxication is held to be responsible for a large number of disorders of the nervous system in which we find constipation existing simultaneously. Among these may be mentioned epilepsy, migraine, neuritis, psychasthenia, neurasthenia, myasthenia, dementia, certain psychoses, and even paralysis.

Exophthalmic goiter has been attributed to intestinal autointoxication.

Neuralgia, insomnia, nightmare, and in children grinding of the teeth and night terrors are produced by intestinal toxemia.

Among ocular affections thus produced, as has been shown by well-known oculists, are blepharitis, keratitis, ititis, and certain neuro-retinal lesions.

The symptoms of intestinal autointoxication may be acute and may even resemble, very closely, ptomaine poisoning, but much oftener they assume the chronic type. The acute form is more common in children.

The group of symptoms most commonly observed is as follows: Headache (often of the type of migraine), vertigo, languor, irritability, insomnia, a high tension pulse, constipation, signs of hepatic congestion, flatulence, indicanuria, furred tongue and associated skin manifestations, as erythema or urticaria. If the attack is more acute, it is usually characterized by sudden vomiting, violent and intractable, with extreme pain, fever, profuse diarrhea, meteorism, local spasms, shock, vasomotor dilatation, and even convulsions and coma, indicating a most violent form of intestinal putrefaction from the decomposition of albuminous food.

An unusual development of gas with eructations, epigastric burning sensations, and acid vomiting usually indicate excessive fermentation.

Constipation may alternate with diarrhea. Arthritis, resembling rheumatism, or distressing myalgic pains may occur.

Physical examination of the colon may reveal retained fecal masses, especially in the descending portion, although there may be a history of daily bowel movements, or even diarrhea. Such accumulations, if not noted by physical examination, may be inferred from the fact that the patient occasionally passes a fecal mass of hard consistency and very offensive odor.

The x-ray, after administration of barium sulphate or bismuth subcarbonate, will aid in the diagnosis.

Charcoal may be administered as a test of intestinal stasis. The limit of time elapsing before evacuation in the feces should be under sixty hours, normally often in much shorter time than that, but a longer time shows intestinal stasis.

The treatment of intestinal autointoxication, by the very nature of its varying causation, must vary according to the peculiarities of each case. The treatment should be based on the principles of eliminating the poison already present, preventing any further introduction and reinforcing the natural protective agencies. The diet for many cases will need to be individualized and any special disease that may be present must be taken into consideration. Medical treatment is important, but hygiene, regular vigorous exercise and proper living will do still more.

In the acute form, treatment of the cause usually suffices. Complete rest in bed and the administration of calomel, followed by salines, is indicated first of all. The diet should be fluid. Water should be given freely, if retained. Stimulants or sedatives should be administered if indicated.

In the chronic form ascertain and treat the cause if possible. If there is ptosis of the abdominal organs, an inelastic support, extending around the body and from navel to symphysis, should be applied in the morning and worn until bedtime. The action of the liver should be stimulated.

Constipation, which is present as a rule, should receive especial attention. Instruct the patient to go to stool at an appointed hour each day, the best hour being after breakfast. Even when there is no desire to defecate, the attempt should be made, for the voluntary effort may force some feces into the rectum and so result in the regular defecation reflexes and the passage of a stool. Proper attention should be paid to the act itself, for failure to defecate may result from the concentration of the mind elsewhere, as on some interesting book or newspaper. When the desire to defecate comes it should be attended to at once, or the feeling tends to pass away and the

fecal matter remains in the rectum without arousing further desire and, if often repeated, the rectum loses its sensitiveness. These simple rules, if carried out by everyone, would render constipation much less pervalent than it is today and much suffering would be avoided.

The diet in intestinal autointoxication is very important. All foods capable of undergoing fermentation or putrefaction to an abnormal degree should be avoided. The proteids should be reduced to a minimum. Milk is of all foods the most serviceable. Peoples that consume much milk are generally exceptionally robust and long-lived. Milk becomes acid during lactic acid fermentation, while meat, under the same condition, putrefies. Sugar protects organic substances against putrefaction. White cheese has a marked effect in reducing putrefaction in the intestine. Baumann presented evidence that the ethereal sulphates—products of intestinal putrefaction—are materially reduced when white cheese is eaten. Buttermilk should be taken freely. Water, as a rule, should be drunk in larger quantities than the average patient usually takes. Cereals should be eaten and are advantageously combined with milk. Fruits and laxative vegetables are important articles of diet.

In order to preserve sufficient heat and energy, yet not tax the digestive functions, olive oil, butter, cream, fat, bacon, cooked vegetables, preserved or cooked fruit, honey, marmalade, and similar articles, should be recommended. Coffee and tea, as a rule, should be forbidden, or at least restricted to one cup per day. Alcohol should not be allowed. Fried articles, hot biscuits and bread under twenty-four hours old should be avoided. The carbohydrates should be restricted in those cases in which flatulence is marked. Bread, biscuits and crackers, made of graham flour or containing bran, leave a large residue and tend to be laxative.

Hot baths increase perspiration and are soothing to the nervous system, especially when taken at bedtime; in cases of insomnia are helpful in inducing sleep. Since toxic substances of gastro-enteric origin are eliminated chiefly through the kidneys, the drinking of cold water and cold bathing seem especially indicated.

Plenty of exercise in the open air, or in well-ventilated rooms, should be strictly insisted upon. Any active exercise may be prescribed, such as brisk walking, running, rowing, horseback riding, baseball, tennis and golf. Simple daily exercises, indoors, may be taken in the lying or standing position. Those to be taken in the lying position might be lying on the back and raising the legs, one at a time and both together to a right angle with the trunk, raising the trunk to a right angle with the legs, etc. Those taken in the standing position might be bending forward, knees stiff, till the fingers touch the floor, and then backward as far as possible, the hands being raised above the head, bending far over to one side and then to the other, rotating the body on the hips, the arms being extended, alternately raising the knees until the thigh hits the abdomen, etc.

Massage is often a helpful measure. It should always be performed in the direction of the colon, and may be done by hand or with a mechanical vibrator.

Cathartics should be used as indicated. The value of the ordinary vegetable laxatives, with or without strychnine, belladonna, or atropine, is recognized by all. Repeated purgative doses of salines are not advisable in ordinary constipation, unaccompanied by other diseases. A small dose of saline once a day, however, may be good treatment.

Whether certain so-called intestinal antiseptics are really efficacious in the treatment of intestinal autointoxication, has not been fully decided. That they may at times be at least partly beneficial in antagonizing poisons already formed within the bowel, and that they are distinctly useful in inhibiting a profuse and dangerous growth of bacteria, cannot be denied. On the other hand, the problem is to be able to apply antiseptics strong enough to destroy bacteria without at the same time injuring the intestinal mucous membrane, and, likewise, at the same time destroying the innocent germs which are concerned in digestion. Among the most useful of the intestinal antiseptics are naphthalin, thymol, the sulphocarbolates, subnitrate and salicylate of bismuth, salol and hexamethylenamine.

Among medicinal agents, which give bulk to the feces, are agar-agar and flaxseed. Liquid petrolatum is used extensively. If well refined, the American oil is probably as good as the Russian.

If there is putrefactive fermentation, lactic acid bacilli may be given in the form of the Bulgarian bacillus. The systematic and continuous use of the latter is especially indicated in cases accompanied by hypertension with a tendency to arteriosclerosis.

At times a high enema, once or twice weekly, of one-half to one pint of warm olive oil, at bedtime, allowing the same to remain until morning, will have a wonderful effect in starting the bowels on a new line of activity.

The weekly, biweekly, or, at times, even daily use of colonic flushing by the postural method, is to be recommended. Perhaps there is a no more efficient measure in both the relief and cure of chronic intestinal autointoxication associated with atony and dilatation of the colon and the accumulation of enormous quantities of fecal matter than the therapeutic application of the coloclyster. By this means it is possible to introduce the largest quantity of water which the colon can hold without overdistending it. In the ordinary enema it is difficult to introduce more than a pint or two of water, and this is usually taken in the sitting position, so that rarely more than the rectum and lower portion of the sigmoid are reached. When the patient is placed in the knee-chest or in the Sims' position, with hips elevated, the amount of liquid may be increased to four or even five or six pints without causing any inconvenience to the patient. In the knee-chest position the action of gravity is still more helpful in completely filling the colon.

Should there be impaction of feces in the colon, sigmoid or rectum, the ordinary purgative enema, composed of water, one pint; Epsom salts and glycerine, of each two ounces, and turpentine, one-half ounce is useful.

The introduction of very hot water (110°-120° F.) into the colon increases blood pressure, improves and accelerates the heart action, and produces a marked effect upon the renal secretion.

The graduated enema, as recommended by Kellogg, is a very useful method of overcoming the enema habit by weaning the bowel from the frequent necessity of distension with warm water in order to produce an evacuation. Each day the amount of water is diminished and the temperature lowered. "Beginning with three pints of water at a temperature about that of the body, the amount of warm water introduced each day is diminished by one-half pint, one-fourth pint of cold water being added, making the total amount of the fluid one-fourth pint less each day. At the end of the twelfth day the enema will consist of four ounces of cold water." Sometimes a preliminary clearing of the rectum by means of a simple enema of warm water is necessary before the high injections are begun.

If measures, such as those spoken of, when thoroughly applied, do not overcome the stasis and toxemia, the question of surgery should be seriously considered. Numerous operations have been devised for the correction of the various causative factors concerned in the arrest and stagnation of the intestinal contents. Among the procedures are those of Coffey and Reed for the restoration of the ptosed colon to its normal position, and those of Lane, whose best-known operative exploits are based on Metchnikoff's view, that we are better off without a colon. When there is extensive disease of the wall of the colon, the exclusion or removal of this organ is a justifiable procedure, after a reasonable trial has been given to medical methods. The surgical procedure to be employed in any given case should be determined, not before operation but after the abdomen has been opened and completely explored. The operation must be made which will most efficiently correct or remove the anatomic or physiologic abnormality which is causing the stasis.

THE NEWER METHODS OF CESAREAN SECTION.*

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Cesarean section has been done on the dead mother since time immemorial. The operation is referred to by the early Egyptians and in the myths and folk-lore of the European races. The Lex Regia of Numa Pompilius, 715 B. C., expressly commands the removal of the child before the burial of the mother. Cesarean section on the living is of more recent date, although in all probability it was performed by the earlier peoples. The ancient Jews applied the term "Jotze Dofan" to a child delivered through the belly of the mother. In 1879, Felkin, an African traveler, witnessed a cesarean

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section performed by the natives in the heart of Uganda. The woman was held in a reclining posture by two men. At her side was a gourd of banana wine, and she was half drunk. The operator stood at her left. First he washed his hands in banana wine, then he washed the belly with the same—active antiseptic measures. With a short curved knife he made one incision through the belly, right into the uterus and quickly delivered the child alive, an assistant holding the uterine incision open by hooking his fingers into it. By uterine massage, the placenta was expressed and hemorrhage controlled. Several bleeding points were cauterized with a hot iron. The cervix was dilated from above with the fingers. The assistants then turned the patient on her side to allow the blood to drain out of the peritoneal cavity, the intestines being retained by a square of plaited twigs, after which the belly was sewed up with pins and figure-of-eight sutures. Pins were made from bamboo stick, the sutures from reed fibres. The wound was covered with a paste made of aromatic herbs. The patient recovered in eleven days, having run a mild febrile course. Without doubt, this operation must have been performed for many centuries for the technique to be so perfectly developed.

The first generally accepted cesarean section on the living was made by J. Trautman, of Wittenberg, in 1610, on a case of hernia uteri gravidi. Engelman says that about 1250 Bishop Paulus of Meirada, Spain, performed one, also that Christ. Bain did one in Italy in 1541. About 1500, J. Nufer, a swinegelder in Switzerland, successfully delivered his own wife after a dozen midwives and several barbers had failed, and in 1581, F. Rousset had published 15 cases, which probably were not all extra-uterine pregnancies, as has been suggested. Rousset's monograph established the operation, and in spite of its own frightful mortality and the resultant opposition of Europe's best accouchers, it very slowly became an acceptable resource in those forlorn cases where the parturient almost to a certainty would have died without it. The Catholic Church had much to do with the habilitation of the operation, since it enabled the rite of baptism to be given to the child. Sigault's symphysiotomy for a few years only was a competitor of cesarean section.

Kayser (Copenhagen, 1844) found a mortality of 62 per cent for the previous eighty years, but Tarnier said that up to his time there had not been a successful case in Paris during the nineteenth century, and Spaeth said the same thing in Vienna in 1877. Harris collected 80 cases in the United States, with a mortality of 52 per cent. The causes of death were hemorrhage and infection. In cesarean sections sutures were not put in the uterine wound because the ends could not be left long for the subsequent removal, as was the custom in olden days. As a result the women often died of hemorrhage into the peritoneal cavity. For the same reason lochia escaped into the belly and usually set up peritonitis. Further, aseptic technique was unknown, and all laparotomies were fearfully dangerous. In 1769, Lebas put three stitches in the uterine wound and left the ends long, by which they were subsequently removed with success, but a true efficient uterine suture was not made until Sänger recommended it in 1882. In 1877 Porro, of Pavia, to avoid the dangers of hemorrhage and of infection from the leaking of the lochia, advised the supravaginal amputation of the uterus after the child was delivered, and for a short time this operation bid fair to replace the old conservative cesarean section. Sänger's operation in 1882 showed such good results that Porro's was soon relegated to its proper place—as an operation where there is some special indication for sacrificing the uterus. The essentials of Sänger's operation are: Median abdominal incision; median uterine incision, with or without eventration of the uterus; use of rubber ligature around the cervix to stop hemorrhage; reection of a strip of uterine muscle under the peritoneum; interrupted silver-wire seromuscular sutures, avoiding the decidua, 8 or 10; interrupted fine silk seroserous (Lembert) suture, 20 to 25; extreme antisepsis.

Previous to Sänger the abdominal incision had been made in all possible locations, the uterus opened in many different places and ways, drainage of the uterus, of the abdominal cavity, above and below, and many other devices had been practiced. The object was to avoid hemorrhage, seepage of lochia, adhesions of the uterus to the abdominal wall, to the omentum, with the danger of rupture of the scar in subsequent pregnancies. With the general improvement of our aseptic technique the results of Sänger's operation got better, and it was found possible to dispense with most things he

considered necessary. Many varieties of suture have been recommended—through and through, interrupted or continuous, buried muscular, seromuscular, decidual, three layers, four layers, silkworm gut, wire, silk, catgut, etc.

Since the difficulties above enumerated always beset the classic cesarean section, and since the greatest dangers came from the fact that the peritoneum was opened, the accoucheurs sought to avoid this necessity and tried to extract the child from beneath the peritoneum. The first suggestion came from Joerg in 1809, and Ritgen performed the operation in 1821. Physick of Philadelphia, in 1824, recommended this operation to Dewees of Philadelphia, but I could not find that Dewees had performed it. Joerg had suggested that the incision be made in the flank, and that the peritoneum be dissected upwards in the manner preparatory to ligation of the internal iliac artery, the child then being extracted from the parturient canal. In 1870, T. Gaillard Thomas revived the operation which had been named "gastro-elytrotomy" by Baudelocque. Very few of these operations were successful, as we can readily understand. It was because of the lack of asepsis, and infection killed nearly all of the women. When Sänger's classical operation became established, the mortality of cesarean section dropped, and in the nineties, series of cases of 100 with 3 or 4 deaths were reported, which for the time, and considering the high mortality of previous years, was very satisfactory. With more widespread usage of the operation, its inherent dangerous features became more appreciated, and on the other hand, its limitations were keenly felt. In order to be successful, the classic cesarean section must not be performed on any but clean unsuspicious cases. The classic cesarean section also left adhesions in the belly, the uterus adherent to the abdominal incision, the omentum to the uterus, intestinal adhesions, even in aseptic cases; occasionally acute dilatation of the stomach occurred. Further, the accoucheur cast about for methods of enlarging the field of supra-pubic delivery and of increasing the number of operations which would render unnecessary the sacrifice of the living child. The desire to avoid craniotomy on the living child is responsible in a very large degree for these attempts to improve the classic cesarean section and extend its indications.

In 1906, Frank, of Bonn, recommended suprapubic delivery after closing off the peritoneal cavity by uniting the peritoneum of the uterus to the peritoneum of the abdominal wall. The child was then delivered through the almond shaped opening, thus shut off from the general peritoneal cavity. Later, Sellheim attempted to push the peritoneum upward from off the bladder as was recommended by Physick in 1824, which thus freed the space over the cervix and lower uterine segment, through which the child was delivered. Many operators, mostly German, modified this idea, and now there are about 20 different procedures. All these methods of performing the operation depend upon certain changes which occur during pregnancy and labor in the relations of the cervix and lower uterine segment to the bladder and vesical peritoneum.

We know that during pregnancy the peritoneum over the lower uterine segment and bladder becomes very much softened and loosened from its base. It also hypertrophies under the stimulation of pregnancy. With the development of the lower uterine segment and cervix in the latter weeks of pregnancy and particularly in labor, the muscle of the cervix is drawn away upwards and outwards from the bladder attachments. The vesico-uterine culdesac is usually obliterated. The peritoneum is also drawn upward at the sides of the bladder in the neighborhood of the round ligaments. At the same time the mobility of the peritoneum on the subjacent structures becomes much increased. It is therefore possible after incising this portion of the peritoneum to push the bladder off of its cervical attachments with great ease, and expose an area of the cervix and lower uterine segment large enough for the delivery of the child without encroaching on that portion of the peritoneum which is opened in the classic cesarean section. Of the twenty or more operations that have been invented only two seem likely to obtain recognition. All these methods may be divided into two classes. First, the transperitoneal, and second, the extraperitoneal. In the transperitoneal operation the belly is opened above the pubis and the peritoneum over the cervix and near the bladder is incised and loosened from its bed. By means of closely set continuous sutures, or by clamps, the parietal and visceral peritoneal layers are united. The lower uterine segment and cervix are then incised, the child delivered, the placenta follow-

ing; then the uterus is closed and the double layer of the peritoneum also reunited. The peritoneal cavity thus is temporarily removed from the field of operation, and infectious matters such as meconiun, liquor amnii, blood, etc., are not permitted to soil the general peritoneal cavity. Some operators cut the line of sutures and reunite the individual layers of peritoneum. Others do not do this, but sew the two layers together. Sellheim sews the uterine wall to the skin and leaves the wound open to drain and calls such a delivery one through a uteroabdominal fistula. Among transperitoneal cesarean sections, that invented by Krönig and modified by Gellhorn of St. Louis, seems to possess most advantages.

The patient is placed in a high Trendelenburg position. This allows the uterus to fall away from the pelvis, stretching the lower uterine segment over the head. A median incision is made from the pubis to within two inches of the navel. The peritoneum is opened as usual, having a care of the bladder, which may be very high. The peritoneal line of junction with the bladder is determined, and lifted up with forceps. A short transverse incision in the peritoneum is made, similarly to that for amputation of the uterus. The peritoneum and bladder are pushed off the anterior wall of the uterus well down toward the external os, uncovering the muscle of the lower uterine segment for a space large enough to make a four and one-half inch incision. The thin lower segment is carefully incised. In my cases the hemorrhage was very free and the cutting had to be done in a pool of blood under the guidance of the fingers. To the obstetrician, however, this manner of operating is the usual one and is easily carried out. The head is delivered by forceps after pulling the face into the opening. The placenta is expressed, the uterus cleaned out, packed if need be, and the incision carefully coapted by two rows of sutures closely set. Then the peritoneum and bladder are drawn up over the line of sutures and united on the face of the uterus. Gellhorn's modification consists in uniting, temporarily, during the time of delivering, the parietal to the visceral peritoneum with a continuous suture. It is needed only in infected cases. When infection is suspected I would recommend leaving a small drain in the lowest portion of the uterine wound leading it out into the vagina, so as to drain the space under the bladder and peritoneum. Or one could make a small opening into this space from below, between the cervix and the bladder and insert a drain. In infected cases, too, a cigarette drain should be placed in the lower angle of the abdominal wound down to but not through the parietal peritoneum.

Of the extraperitoneal methods, that of Latzko is the best. In Latzko's operation the incision is made either transversely or longitudinally, just above the pubis. The peritoneum is pulled out of the pelvis and the bladder is pushed off of the cervix to the right. Beneath the vesico-uterine fold, which has been pushed up toward the navel, a bare space of cervix and lower uterine segment is provided through which the child is delivered.

The most important feature of this whole subject is the indication for operation. Let us remember the objections to the classic cesarean—the dangers of infection of the peritoneal cavity, the dangers of adhesions, the dangers of rupture of the uterine scar in subsequent pregnancies, and finally, the limitation of the operation to clean cases. The hope that these newer modifications would entirely obviate all the above dangers has proven illusory. In virulently infected cases any form of cesarean section is a grave risk. The only operators that I know who have been bold enough to do the newer operations in positively infected cases are Küstner of Breslau and Baisch, and their articles certainly give one food for thought. Küstner has performed 100 extraperitoneal cesarean sections with but three deaths, and many of these cases were frankly infected or suspicious. The deaths were from sepsis and could have been expected. Most authorities, however, have felt that in frankly infected cases the operation was not safe enough, but they believed it has a field in border-line cases or where the infection, if it is present, is not likely to be serious. Here is the important point. Some cases get well no matter what you do, cesarean section, craniotomy, etc., because the infection is non-virulent. Others die in spite of all. Physical signs—temperature, pulse, fetor of discharge, etc., all fail; also bacteriology, to determine the dangerous cases. That the operation will completely eliminate the necessity for craniotomy on the living child, Küstner is the only authority to contend. In several of Küstner's cases the child was born alive but died shortly afterward, an experience which was to be expected, and which makes one question the

wisdom of exposing the mother to such a serious risk for such a questionable gain.

In the next place, as far as peritoneal adhesions are concerned, they are not entirely eliminated by the extraperitoneal methods, and they certainly are not by the transperitoneal. Paralytic ileus and dilatation of the stomach have been observed after extraperitoneal cesareans and even after pubiotomy.

As far as rupture of the uterus is concerned, there are not enough cases which have had subsequent children upon which to form an opinion. Theoretically, one would suppose that the thin cervix and lower uterine segment would more easily rupture than the thick muscular fundus. If one can apply the experience in vaginal cesarean section to this class of cases, one will have to admit that the danger of rupture is certainly no greater than in the classic cesarean section. A second extraperitoneal section may be impossible because of scar formation.

As far as the widening of the indications of the cesarean section is concerned, it must be admitted that the newer methods do permit us a greater latitude in cases of mechanical dystocia. In the classic cesarean section the best results are obtained if the operation is done at the very beginning of labor before the rupture of the membranes, and before any examinations have been made or before the cervix has been large enough to allow any communication between the vagina and cavity of the uterus. With every hour that the woman is in labor the mortality of the classic cesarean section increases. With the extraperitoneal method it is possible to give the woman the test of labor and if the head fails to enter the pelvis, to perform the operation after even 24 hours have elapsed. It is thus seen that the new operation comes into competition with pubiotomy.

Pubiotomy has almost disappeared from the clinics of Europe. A few cases are reported from England and occasionally from France or Germany. In Italy its vogue has also been curtailed. In America, Williams of Baltimore is a strong supporter of pubiotomy. I, myself, perform it occasionally in selected cases. The various modifications of the extraperitoneal cesarean section have displaced pubiotomy in the border-line cases. Whether or not this is a permanent substitution, only a large number of cases will tell. My own experience with extraperitoneal cesarean section comprises only four cases, so that I am in no position to pass judgment. Technically the operation is much more difficult than pubiotomy and decidedly more complicated than the classic cesarean section.

LONGEVITY IN ITS RELATION TO SEX OR WHY FEWER MEN THAN WOMEN ATTAIN OLD AGE.*

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The subject of human longevity is an interesting one to all persons who are not absolute fatalists, bound by the dictum that "A man dies when his time comes," regardless of heredity, environment, occupation or conduct. The study of longevity as influenced by sex is a very significant and practical one from an economic, sociologic and prophylactic point of view. There is a normal or potential age limit for every individual setting forth on life's journey, depending upon the inherent vital qualities or resistance of his organic tissues and their biologic cell elements, on the one hand and the natural wear and tear to which they may reasonably be subjected on the other. A condition which gradually leads up to this potential limit we designate as a normal physiological hardening of the arteries called arteriosclerosis, a pathologic change in the inner arterial wall by which its elasticity is impaired or lost. This potential age limit is seldom reached; for in addition to causes over which man has little or no control, he also contributes to his own undoing in many devious ways, e. g., by greatly exceeding the necessary requirements of the body for food, figuratively speaking. "One may dig his grave with his teeth." Dr. John Abernethy, an old English physician, noted for his aphorisms, put it this way: "One-fourth of what we eat keeps us, we keep the other three-fourths at the peril of our lives." Some one has said: "So prone is a man to his own destruction it seems a devil's use were gone." Nearly two thousand years ago the Roman philosopher Seneca wrote, "Man does not die; he kills himself." This indictment is perhaps more nearly true today than ever before under the artificial conditions of our high pres-

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sure civilization. Among the large number of complex causes, therefore, which tend to premature old age and shortening of life, very many are more or less volitional, that is, dependent upon chosen environment, occupation, and conduct. This volitional control places each individual under a moral responsibility so far as it lies within his power to conserve his own inherent vital resistance to its normal limits.

In dealing with the question of human longevity we must consider the *average* possibilities of life endurance. With individuals these are necessarily of wide variation. What then may we regard as the normal limit for the race in the aggregate? The psalmist wrote: "The days of our years are three score years and ten; and if by reason of strength they be fourscore years, yet is their strength, labour and sorrow; for it is soon cut off and we fly away." Physiologists are generally agreed that the age limit should approximate the century mark more nearly than the Biblical "three score and ten." Gaius, the Roman jurist, living in the time of Marcus Aurelius, wrote, "One hundred years is the limit of human life." Flouriens, the noted French physiologist, who was the first to demonstrate experimentally that the tissues of the body undergo a constant renewal, wrote, "A Treatise on the Duration of Human Life," in which he also placed the natural limit at one hundred years. Sir Richard Owen, the eminent English zoölogist, believed that 103 years should mark the boundary line, while Sir Benjamin Ward Richardson, the noted English physiologist, extended the normal span of life to 110 years. We can cite numerous, authentic cases of recent records, which "by reason of strength" have surpassed the last figure by many years. Comparative anatomists have estimated that the duration of life among various species of mammals has a fairly uniform ratio of five times the period required to fully develop the skeleton of any particular species. In the human species this period is 20 to 22 years, giving 100 to 110 years as the potential limit.

Rudolph Virchow's epoch making discovery of cellular pathology has thrown a flood of light upon the subject of longevity. We know now that the ultimate cells of which all tissues are composed, possess the power of reproducing their kind. Before the parent cell is worn out it has generated a new one to take its place. If this process could be repeated indefinitely our bodies would be immortal; but there comes a time for each when the powers of cellular reproduction slow down and finally become exhausted and natural death results from the inevitable, self-generated, toxins, which cause pathologic changes in the cell, just as in time a piece of machinery is worn out by friction. As Dr. Oliver Wendell Holmes said: "We are all sentenced to capital punishment for the crime of living." The life problem then is, how may we get a stay of execution and postpone the fatal day to the utmost limit of the potential endowment? Let us not be misunderstood. We are making no plea for an *old age prolonged* but for an *old age deferred.* A mere vegetative existence of protracted mental and physical decrepitude is not a blessing. The avoidance of presenility, however, and the conservation of the utilities of mind and body far beyond the usual retirement period for active life (at the age of 60 to 70 years) is of vast importance to society. History affords many instances of great achievements in advanced age. Picture to your mind the sturdy old dogs of Venice, Enrico Dandolo, at the age of 94, leading his gallant fleet in the 4th Crusade, the first to leap on shore at the siege and fall of Constantinople; or Titian wielding his brush with almost undiminished skill in the production of his masterpieces till his palette fell from his hand, when stricken with the plague, at the age of 99; or Antonio Stradivari in his little workshop at Cremona, putting the finishing touches to the last one of his marvelous violins with deft fingers, that had not forgotten their cunning, at the age of 92; or Gladstone, "The grand old man" of England, swaying the multitude with impassioned oratory, in his last great speech at Liverpool, on the Armenian massacre by the Turks, when he was 85 years old; or the exhibition at the Royal Academy, London, of the paintings of Sir Thomas Sidney Cooper, the great English animal painter and favorite artist of Queen Victoria, done when he was 98 years old; or the banquet given to Dr. DeBossy, a noted physician of Havre, France, in honor of his 100th birthday while he was still in active practice and who died in March, 1897, at the age of 104; and thus we might go on relating the great deeds of hosts of men and women, accomplished while nearing the century of life's activities.

Senility is therefore a relative term unlimited

by any fixed age. It is characterized largely by degenerative changes in the arterial system resulting from toxic elements generated within the individual or introduced from without. Osler says "Longevity is a vascular question which has been well expressed in the axiom that 'a man is only as old as his arteries.' To a majority of men death comes primarily or secondarily through this portal.[1]

According the United States Census for 1910 the ratio of the sexes under one year was 1,000 females to 1,027 males. Taken by five-year groups there were under five years of age 1,000 females to 1,076 males. This ratio in favor of the males steadily increases for each succeeding five-year group, with only two slight exceptions, up to 50 years when it reaches a maximum in the age group 50 to 54 inclusive, showing a ratio of 1,000 females to 1,183 males. From this high water mark in the preponderance of males the tide begins to ebb until at the age of 70 the majority is reversed in the ratio of 1,033 females to 1,000 males and at 100 years there were 1,576 females to 1,000 males. In the state of Massachusetts in 1897, there were 35 centenarians, 30 of whom were women.

It is interesting to know that in 1910 there were living in this country 3,555 persons who had passed the century mark. Of these 1,380 were males and 2,175 females. In this connection we should bear in mind that in 1910 there were 2,692,288 more males than females in our population; so that other things being equal, male centenarians should far outnumber female centenarians. How shall we account for the fact that more females than males reach 70 years and that they make the century run in an accelerated ratio? If the dame of a hundred winters is as coy about giving her real age as her sister of fifty then the disparity is even greater than it appears to be.

The experience of life insurance companies confirm the census reports as to the superior vitality of women. A prominent and conservative company in its annual report for 1911 says, "With the care taken in acceptance of all our risks there is no reason for discrimination against women. The mortality experience of this company to the close of 1909 has been more favorable for women than men. The actual deaths of women have been 57.7 per cent. of the number expected, while the actual deaths of men were 60.8 per cent by the same mortality table."[2] This shows a difference of more than 3 per cent. in favor of female longevity. Statistics given in a recent insurance journal show the average duration of life after ten years of age was 44 years for males and 46 for females.

Dr. de Haviland Hall, an English authority on arteriosclerosis and its relation to life insurance, says:

> Though the average duration of life has increased during the last fifty years, there has been an actual increase in the mortality rate among males between the years of 45 and 65 and that one-third the total deaths between the ages of 55 and 65 are due to diseases of the heart and blood vessels.
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> But *why* should more women live to old age than men? In average virility, stature, weight and physical power they are inferior to men. We should naturally expect the life endurance of the male to surpass or at least to equal that of the female. Has nature endowed woman with a higher vital resistance to fit her to be the nourishing mother of the race? If this be true, we must no longer refer to her as the "weaker sex." Our Civil War may be cited by one as a reason why fewer males in recent reports have reached advanced age, but loss of life as the result of war is more than balanced by the excess of male births and the excess of male immigration. Another interposes that the more peaceful domestic life favors longevity in women. On the other hand this advantage may be balanced by the stress, perils and nutritional drain of maternity. Certain diseases also are more fatal in women than men, e. g. cancer, from which one-eighth of all women after 35 years are doomed to premature death, as compared with one-twelfth of all men.
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> The problem before us is to interpret the reasons why the female, in the long run, overcomes the preponderance of male births, the large excess of male immigration and the maximum majority of males in the early fifties. These are the stubborn facts.
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> Inasmuch as heredity, environment, endemic, epidemic and constitutional diseases, hygienic and dietetic errors and the autogenetic toxins which may produce arteriosclerosis are incidental to both sexes alike, it is evident we shall have to seek for such extrinsic poisons as are well known to be active agents in the production of this condition, and to which for obvious reasons the male sex is more constantly exposed. Among these well determined causes lead poisoning, syphilis, alcohol and tobacco are foremost. Concerning all but the last there will be little or no controversy and we will give them only incidental notice.
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> In his most excellent book, "Old Age Deferred," Lorand places tobacco above the others because of its power to elevate arterial tension. The alcoholic habit once acquired is almost universally grafted upon a

tobacco habit and if syphilitic poison also enters into partnership the individual becomes the victim of a most destructive triple alliance.

The male has a large monopoly in these vicious poisons. The tobacco habit is almost exclusively his and is becoming more prevalent from year to year. We gain an idea of the magnitude of narcotic indulgence from the internal revenue reports ending with June, 1914, which show that American consumers of tobacco paid a revenue tax of more than 79 millions of dollars and that too without a single protest. Government reports (February, 1914), show that 1,223,500 acres of the most fertile land in the United States are devoted to the raising of tobacco. This same land with half the labor would have produced 50,000,000 bushels of corn. It is estimated that 80 per cent. of the males, adolescent and adult, are enamored of the narcotic charms of "Milady nicotine." This harmful indulgence becomes excessive with vast numbers who are doomed to a drug slavery that spells premature senility and race degeneracy.

The physiological effects of tobacco are now well determined. Its only active principle is nicotine. In the smoking of cigarettes two other more highly injurious poisons are evolved from the partial destruction of the nicotine and its wrapper, known as pyridin and aldehyde-furfurol. Claud Bernard, in 1857, first pointed out the local effects of nicotine in contracting the blood vessels in a frog's foot. Henri Huchard, the noted French clinician, came to the conclusion through his own experiments that excessive use of tobacco was a cause of angina pectoris, by exciting spasmodic contractions of the small vessels of the coronary arteries of the heart. He points to the high arterial tension often observed in smokers and maintains that smoking is a cause of arteriosclerosis, by reason of the frequent hypertension which it induces. Adler and Hensel produced atheroma of the blood vessels in animals, experimentally, with nicotine.[4] M. Boveri quoted by Metchnikoff did the same.[5] Lauder Brunton, the celebrated English physiologist, says: "I do not know that there is anything that causes such a tremendous contraction of the blood vessels and raises blood pressure to such an enormous extent as does nicotine, except perhaps the extract of the suprarenal capsule which has an action almost identical with nicotine."[6] It is believed by some authors that nicotine has a direct stimulating effect upon the adrenals themselves and that the hypersecretion which tobacco induces in these glands is the cause of the increased blood pressure. Brown-Sequard, the foremost authority of his day on the adrenals as ductless glands, demonstrated that the blood of animals from which the adrenals had been removed became more toxic. Langlois' experiments later showed that such animals died from autointoxication and concluded that the adrenals were created to neutralize or destroy poisons. The very recent works of Sajous in our country demonstrate the important role played by the adrenals in the destruction of microbic and other poisons introduced into the system. "Everything points to the fact that tobacco is especially injurious to the adrenals" (Lorand). It therefore must impair their protective functions.

The distinctively male habit of nicotine indulgence once established is seldom abandoned. A life-long struggle is waged by over-stimulated organs in their protective efforts to antidote this habitual nicotine poisoning, which, like the continual dropping that "wears away the stone," results finally in impaired functions through which the cardio-vascular system receives the brunt of injury. Dr. T. D. Crothers in a paper read before a convention of life insurance examiners, in March, 1914, said: "Tobacco first raises arterial tension temporarily and then diminishes it, causing a sense of comfort and relief that is pleasing and sought for. In a short time depression of motor activities follow with nervousness and deranged nutrition. Later in life irregular and disturbed heart action is noted and sudden heart failure is more common in tobacco users than others. Postmortems show arteriosclerosis. It greatly complicates other poisons such as syphilis and alcoholism and increases susceptibility to other diseases." He also declared that "any study of longevity that does not consider tobacco as a factor influencing the conditions of life will be faulty." Dr. M. A. Pissavy in the "Gazette Medicale de Paris," reports results of the examination of 400 cases seen at the Necker Hospital (283 males and 117 females). Of the cases showing indisputable hardening of the peripheral arteries 30 per cent. were males and only 5 per cent. females. The causes in the order of frequency he gave as alcohol, lead poisoning, malaria, tobacco and syphilis, tobacco causing 17 per cent. of the cases.

Dr. Thomas Bodley Scott in his brochure "The

Road to a Healthy Old Age" (1914) after enumerating some of the causes of arteriosclerosis, says, "Last, but not least, I am inclined to blame the eternal cigarette, that pernicious form of tobacco smoking in which a man never knows when he has enough."

We have touched upon only one feature of tobacco poisoning, that which most directly bears upon the question of hardening of arteries as a cause of premature senility. There is a vast amount of evidence supplied by college presidents and professors; from directors of physical training in universities and from principals of high schools, as to the effects of tobacco in lowering the efficiency of students physically and mentally which cannot be entered into here. The conclusions of these eminent scientists are convincing. The indictment of tobacco as a cell poison, impairing mental efficiency and physical growth in youth and causing a slowly developing arteriosclerosis and cardiac inefficiency, with resultant presenility in adult life, can be supported by volumes of evidence, which should appeal to every one who esteems his physical, mental, yes and moral resources at their full values.

It is beside the subject to instance here and there isolated cases of persons who have been excessive users of tobacco and still have reached a great age. The same can be said of alcoholic intemperates now and then, and occasionally of very old men with active tertiary lesions of syphilis contracted in youth. Lorand mentions the father of one of his patients who had "reached his 96th year in spite of his syphilis," which he acquired an age ago." Also one Drakenberg who died in Denmark in 1770 at the age of 146 and is buried in the Cathedral at Aarhuys of whom he says he "reached this advanced age, although he was more often drunk than sober."[6] These are the exceptional cases, by reason of hereditary vital resistance or unusual tolerance of these poisons. To be fair and for the humor of it, we present about the only sort of defense raised by the users of tobacco to offset the claims made by scientific investigators of its injury to health and life. An old friend, a chain smoker, lighting his fresh cigar from the stub of the other often remarked, "You don't know how much comfort I suffer at this." Narcotic gratification was his vindication and that is the real milk in the cocoanut of the tobacco habit. If only it were as harmless!

Here is the personal testimony of a centenarian devotee, in praise of tobacco for *sanitary* reasons. Newton, N. J., Dec. 20, 1914—"Charles Ashford Shafer, who will celebrate his one hundred and second birthday here Tuesday, says, chewing tobacco is a means of preventing disease. He has been chewing it since a boy." Evidence of this kind is very convincing to the uninformed or to the unthinking user of tobacco.

The following clipping from the *Daily Graphic* and the poem it inspired in *Punch* will confirm the views of scoffing and skeptical smokers:

DEATH FROM EXCESSIVE SMOKING.

Aunt Peggy Bailey, the oldest maid in the United States, died on Saturday. She was 112 years old last March and had smoked pipes since she was 8.

Tobacco, I have loved thee well,
Thy praises oft my tongue would tell
What time in meads of asphodel
With thee I wandered.
At midnight glowed my kindled clay,
My fancy firing; dawning day
Reddened as o'er thy ashes gray,
Pensive I pondered.

Yet had I known the fatal draught
That in thy curling wreaths I quaffed,
More deadly than the poisoned shaft
Of wild barbarians,
Then had I broken clay and briar,
And dashed the fragments in the fire,
Forswearing thee, destroyer dire
Of centenarians.

For who thy poison can defy?
Thy victims in their thousands die
Thick as the butcher'd heap that lie
Countless at Blenheim.
Nor time itself can help provide;
They that a hundred years defied
Fall in their centenarian pride
Felled by thy venom.

Yet haply, spite of all they say,
I had not broken briar and clay,
Nor quite so lightly thrown away
The joy that fills one.
But lingered on spite poison slow,
Another 60 years or so;
It takes a century, you know,
Before it kills one.

Because tobacco does not kill its devotees in a brief space of time, and because it operates indirectly through slowly developed pathologic changes in organic structures, any alarm over its ability to shorten life is treated as a joke. A young man in his teens addicted to cigarettes, when cautioned about their injurious effects replied, "In my work I meet a great many physicians who smoke cigarettes. If it is so harmful

as all that, I shouldn't think they would do it." In reply he was told that in spite of the fact that no one knows the injuries of the morphin habit better than the doctor, yet more doctors are treated in institutions for that habit than any other class. A doctor's example may be a dangerous one to follow sometimes. It is often argued that only the excessive use of tobacco is injurious and not its use in moderation. But what is *excess* and what is *moderation* in the tobacco habit, or any other narcotic habit? Here comes in the personal equation. Excess for one may be so-called moderation for another. After all, if the use of any poison has become a habit, can we speak of moderation in any proper sense of the term? The fact that the use of any narcotic drug has become an established, insistent habit is proof positive of an excessive use of that drug, to our way of thinking. Inasmuch as this habit, to a large extent, is acquired during the period of adolescence when its injurious effects are most salient and because its indulgence is most constant, insistent and universal: we believe it ranks a near competitor with alcohol and syphilis as a race poison, not only shortening individual life, but also exerting a baneful genetic influence upon progeny. This latter position is sustained by Dr. H. H. Tidewell of London, England, in a recent book on "The Tobacco Habit." There are doubtless other special causes peculiar to the male, not already mentioned, which render him inferior to the female in longevity. We have specifically dwelt upon that one, which to us seems to be one of the proven, potent, contributive causes. Familiarity with its seductive pleasures, its social amenities and its universal prevalence has rendered us blind to its masked and slowly developed injurious effects.

The remedy is self-evident. Its adoption to any great extent seems a forlorn hope. Must we then join the lamentation of the prophet Hosea "Ephraim is joined to idols. Let him alone?" This is not the slogan of modern uplift propagandas. If it is true that nicotine has a special affinity for certain organs that induces deleterious changes in the cells and tissues of the vascular system by which the span of life is materially shortened, a knowledge of this fact should be widely disseminated among the youth before the injurious habit is acquired. Example should lead precept with clergyman, teachers, physicians and above all with fathers.

In conclusion we have shown, first, that the female, though outnumbered at birth and by immigration, reaches old age in far greater numbers than the male; second, that this disparity is due to certain extrinsic poisons capable of inducing cardio-vascular presenility, to which toxins the male is obviously more prone than the female; third, that the nicotine habit answers every specification of a cardio-vascular toxin and is, therefore, *one* of the very significant reasons why fewer men than women attain old age.

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PRESIDENT'S ADDRESS

POST GRADUATE WORK AT HOME.

A. J. ROBERTS, M. D.,
President La Salle County Medical Society.
OTTAWA, ILL.

"When I can no longer improve my methods I want to step aside and let another take my place." This statement was made in my presence by an architect a few days ago. If this applies to other professions, how much more should it apply to ours.

When we have reached the place where there is no chance for improvement, then I believe we should step aside and let a younger and more progressive man take our place.

President Arnold of the Harvard Medical School has brought this out very vividly in a recent address in which he says: "The subject of graduate medical instruction is attracting much attention at the present time and is becoming a very important problem in medical education in this country." Acting through its most representative body—the American Medical Association—efforts for improvement were naturally directed first to the medical schools themselves. You all know how much the Council on Medical Education has accomplished in the ten years since it was organized, in establishing high standards for medical schools, in forcing many of the poorer schools to close their doors, and in making better schools of those that remain. While much still remains to be accomplished in this direction, the problem of the proper training of medical students may be regarded as practically settled.

The most important problem of today is that of improving the knowledge of those who are already engaged in the practice of medicine. Many of them have received a very inadequate training, and from the point of view of the public welfare it is as important that these physicians should become better trained, as it is that those about to enter the profession should be well trained.

Recognizing the importance of this problem, the Council on Medical Education has undertaken a study of the present status of graduate medical teaching, with a view of making suggestions for its improvement. It recognizes the need of adequate opportunities for graduate medical study, not only because many members of the profession wish for such opportunities but because they are essential for the public good. This aspect of the problem, the relation of graduate medical teaching to the public welfare, has received altogether too little attention. We have looked at the subject exclusively from the point of view of academic teaching. It is commendable to encourage students to carry their studies to the limits of knowledge in any subject, and it is a worthy ambition to have the most complete equipment and facilities for such studies. But after all is not the real underlying spirit of our universities a desire to be of service to the community? Do they not aim to furnish the inspiration that will improve the condition of mankind, and raise the standards of civilization? We have been so fully occupied with the details of medical instruction, and with the difficulties of keeping pace with the growth of medical knowledge, that we have given little thought to this deeper problem of public service. Yet the possibility of public service should be one of the strongest arguments to induce medical schools to take up graduate teaching and it should influence the line of development of this work.

Returning to the problem of the physicians who have had an inadequate training, where shall they get adequate opportunities for further study? To a certain extent it is practicable for them to attend the regular exercises given in the undergraduate schools, especially the didactic lectures and the clinical demonstrations before a class. The presence of graduates at such exercises does not interfere with the regular instruction. This is not true, however, when we come to consider individual instruction in section teaching. As a rule it is inadvisable to admit graduates to sections of undergraduate students, because the graduate should have special instruction, adapted to his individual needs, and this can be given only at the sacrifice of time which should be given to regular students. Furthermore, few graduates can afford to give the amount of time that would be required to pursue the studies, as arranged in the curriculum of a medical school. Courses should be provided which are especially adapted to their needs.

The poorly trained men need elementary courses, not advanced courses. Should the medical schools provide such courses? Should elementary courses of this character be provided in graduate medical schools?

Dr. Arnold's contention, as you see, relates solely to graduate instruction in medical colleges, but we as graduate physicians can do much to improve our work by taking up post-graduate work at home.

In order to keep pace with the galloping events in our profession we must lay aside our work occasionally, make a pilgrimage to one of the great centers of medical education and research and endeavor to catch up with the procession or admit that we must take position with the laggards and fall in the rear.

Of all the professions it can be said of the practice of medicine perhaps more than any other, "It is not an exact science." Notions we held two years ago we have today discarded, and one who has not studied the new writings nor attended meetings of the medical societies perhaps still will say in the language of the advertisers, "Rheumatism is the result of an accumulation of uric acid in the tissues, or consumption is an inheritable disease cured only by removing to a dry climate." How often have you heard of a patient who was threatened with pneumonia but the timely arrival of the family physician has averted the calamity? No such thing! If the patient has been overwhelmed with a pneumococcus infection no amount of flaxseed poultices or nauseating drugs can avert it.

I inisst that now as never before the young man is coming to his own, and the family physician is passing if indeed he has not already passed.

We have all heard about the doctor who knows all about "my constitution," and we all know how erroneous has been this belief. Either this doctor knows little or nothing about the patient or he

belongs to that class of physicians who has kept abreast of the times and knows what is being done in medicine and surgery.

Fortunately indeed we have men who have been long in the harness but are still young and seekers after knowledge. These are the "leaven that have leavened the whole meal." Had we not had these tireless workers the practice of medicine would not keep abreast with the other great sciences and we should have to be relegated to the rear as a science, whereas we have kept pace with the other great professions and have far outstripped some of them.

What applies to our profession certainly applies to us as individuals, and I believe it is essential to each one of us that we get back to our books once more or that we take up a systematic course of study such as is proposed by McCormick and others.

How then can we bring about this post-graduate work and improve our own methods of diagnosis and treatment of disease? How can we make ourselves more efficient and do the class of work that will make us real competitors with other men in our profession? If we are to accomplish anything it must mean hard work and plenty of it. We have our auxiliary societies which might be utilized for purposes of study. Through these branches we might take up special study of our new conception of cause and treatment of disease.

To my mind the greatest lack in our work is that of a correct diagnosis. Given a correct diagnosis any one can apply the treatment.

Assuming that we have all the instruments of precision (which we have not), how many of us can interpret what we see through a cystoscope, a fluoroscope or even a Roentgen plate? This then should be our aim. Perfect ourselves wherever and whenever we can to do this work.

If we cannot do this we should at least know what is being done in order to more intelligently treat our cases—in other words, send the cases to one who can give us an intelligent diagnosis. For example last fall a member of my own family had the misfortune while cranking the car to have a back fire with the resultant Colles' fracture. With the aid of another physician I reduced the fracture. The wrist looked like a perfect adjustment of the broken fragments, but on referring him to the Roentgenologist I found the ulna impacted between its broken end and the radius. Had it been allowed to remain so the lad would have had limited motion, but after learning the true condition I had it adjusted. This is a common occurrence in the life of every general practitioner, and no doubt we would get better results if we would simply avail ourselves of the facilities to which we all have access.

Another line of work which I am sure we have neglected is that of research work in the study and analysis of endemic and epidemic diseases. For example, every little while we have an epidemic of catarrhal jaundice which is of uncertain origin. If we could get together, compare notes and make a study of the condition, we might help relieve these little sufferers.

Again in epidemics of typhoid and scarlet fever we might trace the source of infection and stamp out an epidemic before it is fairly launched.

To sum up I suggest that we take up some line of study by groups or through our auxiliary societies each week and see what we can accomplish for one year. In other words, that we do intensive work and at the end of the year report the results to the county society.

Dress warmly, don't coddle yourself, bid defiance to Jack Frost and the chances are you will get through the winter without having to require the services of either the doctor or the undertaker.

When a man begins to get fat, it generally means too much income and not enough outgo; that is, too much eating and not enough exercise.

Some men are old at 45, others are still young at 70. It is not so much a question of the calendar as it is a matter of right living.

Money wisely spent for public health purposes invariably pays handsome returns on the original investment.

A tooth brush at home, one at the office, and another in a neat case for your vest pocket are none too many.

Bad air is a bully agent for promoting bad colds and other bad air diseases.

The best time for you to take care of your health is before you get sick.

Be temperate in all things to protect your health and enjoy long life.

From the Bulletin, Chicago Department of Health.

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JANUARY, 1916

Editorials

PROFESSIONAL SUCCESS.

Father Time has marked another cycle, and the readers of the JOURNAL are another year nearer the goal, whether it be of success or of failure.

Comparatively few medical men are failures. A man fails only when he does not accomplish that for which he strives. Fortunately, all men do not strive to attain the same ends nor the same levels. It is not necessary that all men be mental giants that they may make success; neither is success always marked by a blazing trail of publicity.

Ian MacLaren pictured two successful medical men—the one famous throughout the empire, the other scarcely known beyond Drumtochty. MacLaren's hero, while living a life of hardships and deprivation, and hating publicity with all a Scot's ability to hate, attained a success envied by his more famous brother, and died with no more wealth than the ardent love and admiration of his fellow-man and the knowledge of his having done a life's work which was of inestimable value to his people.

Riches are never attained by the great majority of medical men, and one entering the profession must bid adieu to the dream of affluence. Hard work must be the lot of him who practices medicine—or failure. If, in looking backward, we compare our work with the measure of the successful commercial man, we will not feel particularly elated, and this should prompt us to adopt, for the coming year and future years, some of the commercial man's methods.

It is necessary for the professional success of a medical man that he have a competence sufficient on which to live fittingly and comfortably, and with which to provide for the future of his family. He must have this much that his mind may be free to work out his medical problems, and not be overburdened and overtired with the petty problems of existence. "The laborer is worthy of his hire," and the physician should adopt enough of the commercial man's method to insure this for his own welfare.

Success or failure in medicine, so far as service to one's patients is concerned, or so far as one's future prospects are in question, depends much upon available medical literature and its constant reading. Never, within the history of medicine has continual reading and study been so demanded. This necessitates several good medical journals and some of the latest text or reference books for every physician.

The meaning of success to most medical men implies the keeping within the limits of our honorable ethical code; that advantage gained by unscrupulous or unprofessional conduct or practices will hardly be counted success, but will be looked upon by our fraternity as failure.

The year 1916 promises great things for the practice as well as the science of medicine. Let us, as physicians, set ourselves a high standard; let us set a high standard for our State Medical Association, and strive with no small effort to gain the level of our aspirations, so that at the close of 1916 we may look backward once more and feel ourselves successful.

A HAPPY AND PROSPEROUS NEW YEAR.

The JOURNAL wishes all its readers the best year that they have ever experienced. May the most you wish for be the least you get! And as the prosperity of the profession is so closely bound up with the exchange of experiences we

would make a special plea for the more frequent attendance of our members at their medical meetings. A review of the notices of meetings published in the JOURNAL in 1915 discloses the fact that only 38 out of the 98 County Medical Societies held any meetings that were reported to us. The Chicago Medical Society led with 36 meetings. The fifteen branch societies held numerous meetings, but Englewood branch was the only one to report any. Four county socities held 7 meetings; three held 6; one held 5; four held 4; five held 3; seventeen held one each. The 38 societies held 141 meetings, an average of less than four; and for the whole 98 societies an average of less than one and a half. Sixty socities reported no meetings at all!

That record would not lead anyone to be very enthusiastic on the subject. The total meetings of the Chicago branch societies would doubtless nearly double the figures given above, and in point of attendance and value, from a medical standpoint, they average among the best in the state. This is, of course, to be expected from the fact that the members live within a few blocks of the meeting places and the time of meeting is generally late in the evening.

County societies in general must hold meetings during the day on account of transportation difficulties, and usually it means a whole day taken from business. It, therefore, demands an unusual degree of esprit de corps among the members located in the smaller towns and villages.

Would it not be possible to supplement the regular meetings of the county societies by more frequent meetings of the members in each town? This has been in successful operation in several places, notably in Elgin, for years. In that way informal evening meetings can be held without loss of time, as in the case of meetings requiring long trips by train.

We advocate local meetings, not to take the place of the more formal county meetings, but to supplement them. The small meeting with interchange of experiences may be made very valuable, especially when the members prepare themselves by reading up on the topic for discussion. In this way the medical, the financial and the legal aspects of practice can be discussed from time to time to the great advantage of all concerned. The great meetings have no monopoly on the blessings. "When two or three are gathered together in Thy Name, I will grant thy request," applies as well to medical science.

THE CASE OF LYDSTON VS. THE AMERICAN MEDICAL ASSOCIATION.

Briefly stated the case is as follows: Dr. Lydston, five years ago, brought suit to mandamus the state's attorney to bring quo warranto proceedings against the American Medical Association, citing that it was illegally organized in that, as a corporation of the State of Illinois and subject to its laws, it held its annual meetings outside of the state and did not elect its trustees by vote of the members but chose them indirectly by votes of persons not entitled to vote as members of the association.

Technically the case was a petition for mandamus made by Dr. Lydston to compel the state's attorney to institute quo warranto proceedings against the Association and its alleged illegally elected trustees. Practically the case was and continually has been defended and fought through all courts, not by the state's attorney of Cook County, but by Frederick Z. Marx, attorney for the American Medical Association.

The defendant demurred and the demurrer was sustained by the Circuit Court. Lydston appealed to the Appellate Court, which reversed the decision of the Circuit Court, holding that it erred in sustaining the demurrer. Thereafter, *by stipulation of the parties to the suit,* the Appellate Court set aside its judgment remanding the case, overruled the demurrer and entered a final judgment awarding a peremptory writ of mandamus against the state's attorney. The defendant appealed to the Supreme Court, in spite of his consent to the attitude of the Appellate Court.

The Supreme Court held that the Appellate Court had no business to change its former judgment, in spite of the agreement of the parties, and ordered the latter court to enter its original judgment which had reversed the Circuit Court. Thereupon the Circuit Court obeyed the Appellate Court, reversing its judgment sustaining the demurrer of the state's attorney (A. M. A.) and entering a judgment which ordered the mandamus.

November 8, 1915, the Appellate Court affirmed the final judgment of the Circuit Court. December 20, the Supreme Court denied the defendant's petition for a writ of certiorari which asked the Supreme Court to hear the case on ap-

peal. There is therefore nothing left for the state's attorney but to serve the writ of quo warranto against the American Medical Association.

The case has already been heard and decided on its merits. The original petition of Dr. Lydston for quo warranto stated the reasons therefor and these reasons were incorporated in the subsequent arguments in the different courts. The attorney for the A. M. A. (ostensibly for the state's attorney), Mr. Marx, cited precedents for his side of the case and these are overruled in the decisions. If the case goes again before these courts the judgments will be reaffirmed because the questions at issue have already been argued before the courts and have been the basis of the decisions already handed down.

From the above it is evident that the Association must sooner or later reorganize along democratic lines. What these lines shall be depends upon the members into whose hands the courts have practically delivered the Association.

TUBERCULOSIS NOTES.

In artificial pneumothorax in general, there is a unanimity of opinion among those of the most experience as to the indications for applying this treatment; extensive unilateral (or chiefly so), progressive or chronic lesions, which fail to respond to the ordinary hygienic-dietetic treatment, or to tuberculin. Second: recurring more or less severe haemoptysis, which fails to yield to ordinary treatment, or very severe hemorrhage not otherwise controlled, provided, of course, one can be sure from which lung the hemorrhage comes. There seems to be some diversity of opinion and practice, however, in regard to the two extremes, the earlier cases and the last-stage ones.

Pneumothorax therapy is by some recommended for early or incipient cases, which appear to have no recuperative power nor show any improvement under the ordinary treatment; also, in early cases which have no opportunity for the usual open-air treatment, or, again, when the progress toward improvement is particularly slow. At the other extreme, this treatment is employed by many, in otherwise hopeless or doomed cases, as a last desperate resort, whenever compression can be consummated, and occasionally an arrest is obtained.

To assume that if the operation does no good it will do no harm, is false, for there is always the possibility of pleural shock, gas embolism, subcutaneous emphysema, infection of the pleural cavity, disturbance of the blood supply from displacement of the heart, and alighting up of the inactive.—*Boston Medical and Surgical Journal,* November 11, 1915.

A homesick patient never does well. This should be taken into consideration before sending patient great distances from home.

It is well worth while to examine the chest of every case of "stomach" trouble. A great many will be found to have gastric distress, secondary to pulmonary tuberculosis.

The trachea, even in early cases, may be pulled out of position.

Dr. Ritter, experimenting with the cutaneous tuberculin vaccination method, reports excellent results.

An important factor about sputum is that the tubercle germ may be absent, even in well developed cases. Small lyphocytes in large numbers often foretell the early appearance of the germ.

Venesection, taking a pint or more rapidly, will almost always stop pulmonary hemorrhage. However, the method is not to be used indiscriminately.

PENSIONS FOR THE BLIND.

One hundred and twenty-five blind men and women of Cook County have qualified for $150 a year pensions under the new law, and County Clerk Sweitzer, who receives applications, has forwarded the pension list to the county board.

The pension list has been made up from the hundreds of sightless persons who have applied. Restrictions in the law, responsible for the turning away of applicants, are as follows:

Blind men must be more than 21 years of age, and women must be 18 or over.

Three years' residence in the county and ten years in the state must be shown by applicants.

Blind persons with annual incomes of more than $250 are not eligible to the pension.

Applicants who are owners of real estate are barred.

Applicant must not be a charge of any county, city or state charitable institution.

Applicant must have no visible means of support other than an income of $250 a year or less.

Two persons of good repute must make affidavit that they have known the applicant for more than three years and that the statements in the application for a pension are true. The county board figures on a large pension list eventually.

Public Health

NEW BIRTH AND DEATH REGISTRATION LAW LIFTS STIGMA FROM ILLINOIS.

Benefits Illinois Profession Quite as Much as Public, Says Medical and Lay Press—Law to Be in Operation by January 1—Important Features of the New Law Outlined

No legislation of recent years has done so much to raise Illinois in the esteem of her sister states and, incidentally, give a better standing to the medical profession and public health authorities of the state, than the birth and death law enacted by the last General Assembly.

This assertion is based upon editorial utterances of the medical and lay press not only in Illinois, but throughout the nation; and likewise upon statements made in the official publications of the health departments of the various states and in official communications received by the State Board of Health.

In other states where efficient birth and death registration laws have been in operation for some years—and that means practically every progressive state of the Union—there is a very general and proper impression that in the absence of registration of births and deaths, the people are deprived of legal records, which, year by year, are becoming more and more a matter of necessity in their business and social relations, and the public welfare is being jeopardized by reason of a lack of information and data which are absolutely essential to public health protection. For this failure to serve the public interest the medical profession gets the lion's share of the blame and the evident conclusion is that a profession so neglectful of public interests must necessarily be of a low grade of proficiency.

These are the commonly expressed sentiments and if the passage of our new birth and death registration law has served to dispel such views, held with respect to Illinois, the state and medical profession will profit much.

Preparations for putting the birth and death act in operation on January 1, 1916, are now nearing completion. Over 2,300 registration districts have been outlined and approximately 4,600 registrars have been advised of their duties under the law. It has been necessary to prepare fifty different reporting and recording blanks, forms and booklets of instructions and, to start the enormous machine in operation, about 6,000,000 pieces of printed matter are now being distributed.

Those who have been interested in the passage of this excellent law—and the more progressive members of the medical profession have desired it for many years—will recall the following important features:

(a) Requires burial permit to be issued by registrar as prerequisite to any burial; charges undertakers with duties of filling the certificate of death, with presenting same to the physician or coroner for signature and certification of the cause of death; of securing the burial permit from the registrar and of delivering the same to the custodian of the cemetery.

(b) Requires that birth and death certificates shall contain at least the data required by the United States Bureau of Census.

(c) Defines stillbirth; prohibits any certificates disclosing the identity of the parents of an illegitimate child without the consent of such parents.

(d) Provides for the issuance of certificates in the case of deaths where there is no medical attendant.

(e) Requires cemeteries to demand burial permits and to return such permits to the registrar. In the absence of custodians of cemeteries, the duty of reporting burial and of returning the burial permit is imposed upon the undertaker.

(f) Requires the report of every birth within ten days and, on demand of the health officer, the report may be required within twenty-four hours. The given name of the child need not be a part of the early report, but must be supplied subsequently in order to complete the birth record. Provides for the registration of births of children born prior to this Act.

(g) Requires hospitals and other institutions to keep records of all inmates from which birth and death certificates may be made.

(h) Directs counties to pay the local registrars twenty-five cents each for all birth and death certificates up to the number of 5,000 per annum, and ten cents each for those in excess of 5,000 per annum, payment to be made upon certification by the State Board of Health.

(i) Provides for complete copies of all certificates for county clerks and for the United States Bureau of the Census. The original certificates must be forwarded promptly to the State Board of Health in whose offices they will be filed and statistical reports issued.

* * *

It will be observed that, under the new law, no provision is made for payment to physicians by the county for the certificates filed. Such fees, instead of being paid in insignificant driblets to individual physicians, go to meet the expense of operation of an efficient machinery for registration of vital statistics and it is very certain that no Illinois doctors, who have the interest of the profession and of the public at heart, will feel that they are in any sense losers by the change.

The medical profession of Illinois has stood too long in the unfortunate light given to the state by its inadequate methods of registration; the medical profession has worked too long to obtain registration such as is acceptable to the national government and the more advanced states, to be in any way concerned over a trifling personal concession to obtain the benefits of this excellent law. In other states, where good methods of registration have been adopted, the medical profession has made similar sacrifices without complaint and without comment. This will unquestionably be the attitude of the profession in Illinois.

Among the benefits which will unquestionably come to the medical profession of the state through the adoption of standard methods of vital statistics will be the greater readiness on the part of other states maintaining high standards, to consider the claims of Illinois physicians in the matter of reciprocity in state medical licensure. As long as Illinois lurked in the dark ages in the fundamentals of public health administration, the entire attitude of other states was one of skepticism toward the medical profession, as well as toward the state's public health machinery.

It will also be observed, in the provisions of the

law, that the physician is no longer charged with securing the details of the death certificate nor of making out the certificate, other than that portion relating to the date and cause of death. These matters are now imposed upon the undertaker, who will render the service without compensation.

ACTIVITIES OF THE BUREAU OF SANITARY ENGINEERING OF THE STATE BOARD OF HEALTH.

The newly created Bureau of Sanitary Engineering of the State Board of Health has already demonstrated its usefulness in meeting the sanitary emergencies which arise throughout the state. The Bureau was put to the test during the recent outbreak of typhoid fever in and about Petersburg, in Menard county, when 180 cases of typhoid developed, due, as was ascertained by the Engineering Bureau, to pollution of the wells at the Old Salem Chautauqua during the high water of last summer. This was but one of scores of sanitary problems confronting the Bureau on its creation.

While it was anticipated that the Bureau would contribute much to the health of the state in meeting such emergencies, an opportunity for valuable constructive work suggests itself in requests which are coming to the State Board of Health from various communities. One of these is a request from the mayors and health officers of Champaign and Urbana that the State Board of Health undertake a sanitary survey of those cities with a view of pointing out the real existing sanitary conditions for the purpose of outlining a definite plan of improvement and extension of water supply, sewage disposal and other means of disease prevention. The survey would also include a constructive plan of organization of public health agencies of the two cities.

Another request comes from the city of Jacksonville, urging that the State Board of Health detail its Sanitary Engineering Bureau to survey the water supply, sewage and garbage disposal and other sanitary equipment of that place.

This is the preventive work that counts. It is the locking of the stable before the horse is gone. It is the prevention of calamity rather than the saving of wreckage which so often occupies the full time of sanitary organizations.

SCHOOLS FOR HEALTH OFFICERS.

Soon to Be Established in Illinois—District Conferences Twice Yearly and State Conferences Annually—Duties of District Health Officers Outlined.

With the beginning of the new year the enlarged service of the State Board of Health, made possible by the laws enacted by the last General Assembly, will be fully organized on a permanent basis. This increased service will be brought about by the employment of district health officers, the state epidemiologist and the newly-organized Bureau of Sanitary Engineering. The general duties and functions of these officers have already been dwelt upon in these pages; but one important function of the district health officers has not as yet been reviewed and is not appreciated throughout the state.

For the purpose of the district health officer service the state has been divided into five districts, each of which will have its own full-time medical officer. Each of these officers will be expected to organize in his district a conference or school for health officers, to meet, at the most centrally or conveniently located points in the district, at least twice each year and to carry out programs of papers and discussions of such a character as will serve to enlighten local health officers in the latest and most approved methods of public health administration.

With these five rather definitely organized conferences or schools serving as a basis, there will be an annual conference of all of the health officers of the entire state.

Experience in other states has demonstrated that conferences of this kind are of the utmost value, if not quite indispensable, to efficient health service in the smaller communities and rural districts.

As may be seen, in the list of local officials of Illinois, published in the December number of the Health News, the official monthly bulletin of the State Board of Health, there are over a thousand municipal health officers scattered throughout the state. These men are charged with grave responsibilities in their various localities—upon them at times may rest the safety of the entire community,— and yet, for the most part, they must rely for their special training and knowledge upon correspondence and printed literature. There is no organization of health officers in Illinois;—no place where these officials, following the same lines of work and encountering the same problems, can come together for the discussion of their methods and the exchange of ideas.

While the general principles of public health and sanitation may be quite definite and settled, sanitary and public health problems may be materially altered by local conditions. The Illinois health officer cannot rely for his guidance upon the published experiences of the health officer of Massachusetts, Georgia or California. Further, the health conditions encountered daily in Alexander County may be met with seldom or never in Jo Daviess County. What is hoped of the district health conferences is that they will be the place where health officers may gather to learn all of the new practical things of preventive medicine and then to discuss how these new things may be effectively applied to the conditions peculiar to that section of the state included in the particular district.

As a result of the interest created in these district conferences it is but natural to assume that the annual meetings of health officers from all parts of the state will be well attended and will

be productive of lasting benefit. At the annual state meetings it is the purpose to bring sanitarians and health authorities of prominence to speak on their special subjects; but always with a view of practical application. It is not at all unlikely that these annual meetings will become the center of public health discussion where the government and extra governmental agencies and organizations will come together to combine their forces in the warfare against the common enemy—disease.

But aside from these conferences, the district health officer service means much in direct benefit to the people of Illinois. It means that there will be, resident in each of the five districts, a medical health officer, licensed to practice medicine in Illinois, who must give his entire time to the duties of his office. Under the direction of the secretary of the State Board of Health he will supervise all health officers in his district and will work constantly to promote the efficiency of health organization, with the ultimate object of creating a county health officer service. He will engage in an active educational campaign, with lectures in schools and churches and before civic and sociologic organizations and will confer with all organizations in the district interested in public health work or in special sanitary problems.

It will be the duty of the district health officer to enforce all health laws and rules of the State Board of Health and to decide all questions of disputed diagnosis in communicable diseases. In time of need he will organize and direct emergency health service for the suppression of epidemics when communicable disease spreads beyond control and when, under the statutes, the State Board of Health deems it necessary to supersede the local officers in authority, and in times of floods or disasters he will organize and direct emergency medical relief.

The district health officer, while performing these numerous functions, will have as his consultants and advisers the epidemiologist of the board, whose service will extend over the entire state, and the services of the newly created Bureau of Sanitary Engineering. Thus, the new plan of service contemplates more or less intensive health work in the various districts backed up by expert advisory service and with it a co-operative relationship between state and local health agencies.

"BABY WEEK" TO BE WIDELY OBSERVED IN ILLINOIS.

Suggestion of State Board of Health that Baby Health Conferences be Held Under Auspices of County Societies Meets with Marked Favor.

Throughout the entire United States the week ending March 11, 1916, will be observed as "Baby Week."

All agencies, governmental and extra-governmental, whose activities relate to questions of public betterment, and especially those engaged in child welfare work, have been asked to contribute a part to the movement which has for its object the stimulation of more intelligent and more active public interest in the cause of the babies.

The organized medical profession, public health bodies, women's clubs and many civic and sociologic organizations have joined hands in the effort to promote this worthy undertaking to complete success. Indications are that it will be the most successful child welfare campaign ever inaugurated in this country.

To an inquiry addressed to the State Board of Health asking what might be expected of Illinois in this movement, reply was made that perhaps the best contribution that the state medical department and the organized profession can offer is a cooperative plan for the holding of strictly scientific "Better Babies Conferences" in each county of the State, the scientific work of such conferences or contests to be carried on under the direction of the medical societies of the respective counties, the work of promotion to be done by local women's organizations, the State Board of Health cooperating.

This suggestion met with the enthusiastic endorsement of the central body responsible for the promotion of "Baby Week." It has since been submitted to each of the county medical societies for consideration and at this writing twenty-two societies have acted favorably on the proposal; others have advised the Board that it will be taken up for consideration at their January meetings.

The State Board of Health announced that for the purposes of these "Better Baby Conferences," it will be prepared to supply literature on (1) "How to Organize a Better Babies Conference," (2) "Instructions to Examining Physicians," (3) "Instructions for Scoring Child by Scientific Methods," also the necessary score cards, tables of standards and certificates of examination.

A new booklet on the care of babies entitled "Our Babies—How to Keep Them Well and Happy," prepared by the Illinois State Board of Health will be ready for distribution during "Baby Week."

The following appeared in the editorial columns of the *Springfield News-Record*, December 14, 1915:

FOR BETTER BABIES.

The "Better Babies" contest at the recent state fair has given an impetus to baby welfare work that will accomplish great good. It will hasten the time when we can no longer be reproached with the charge that Illinois pays more attention to the breeding of cattle than to the proper rearing of children.

Dr. C. St. Clair Drake, whose efforts made the fair baby contest a success, is now planning to encourage local contests of a similar character in all parts of the state. It is proposed to hold these contests during the week of March 4-11, which is to be observed throughout the state as "Baby Week."

Literature will be provided by the board explaining how to organize scientific baby contests, instructing physicians on methods to be pursued in the examination of babies and giving scoring methods.

The board of health is the proper agency to take up this work. It is removed from any suspicion of personal interest or favoritism.

These contests are wholly different from the old fashioned baby shows, which were a nuisance. They are simply examinations of babies to learn how nearly they conform to certain recognized standards.

Every mother wants her baby to make a good showing, of course, but she ought to be glad to be told in what respect the baby comes below standard in order that she may attempt to cure the defect while there is time.

The state fair contest proved that mothers take this view of it.

Dr. Drake has been following up some of the "exhibits" at the state fair contest, and he finds that in most cases the mother consulted the family physician at once regarding defects discovered in the baby.

The mother's ambitions are all wrapped up in the life of her child. She needs only a hint as to how she can improve the future prospects of the little one.

Armour & Company announce their ability to supply in limited quantities Peptonum Siccum, a high grade product entirely free from reducing sugars and other diluents and of low ash content.

Peptonum Siccum is made especially for bacteriological purposes. It is a pure article, however, and will answer wherever a high grade non-hygroscopic peptone is required.

Peptonum Siccum will be sold in 25, 100, 250 and 500 gramme bottles.

W. B. Saunders Company, publishers of Philadelphia and London, have just issued their 1916 eighty-four page illustrated catalogue. As great care has evidently been taken in its production as in the manufacture of their books. It is a descriptive catalogue in the truest sense, telling you just what you will find in their books and showing you by specimen cuts, the type of illustrations used. It is really an index to modern medical literature, describing some 300 titles, including 45 new books and new editions not in former issues.

A postal sent to W. B. Saunders Company, Philadelphia, will bring you a copy—and you should have one.

It may take more than one swallow to make a summer, but only half a swallow of dirty milk can make a summer complaint.

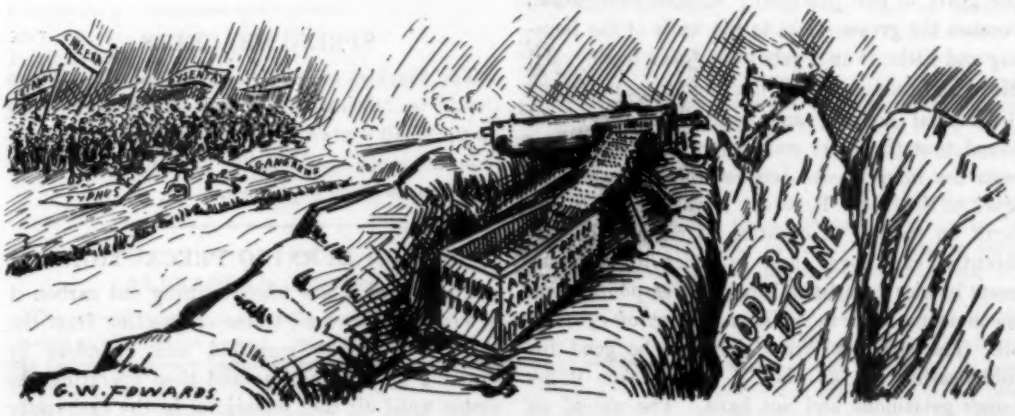
Robbing yourself of sleep puts a mortgage on your future health and happiness; Nature will foreclose.

Open windows close the doors to consumption.

Your lungs can't be washed, but they can be aired.

—*From Bulletin Chicago Department of Health.*

AN EFFICIENT ALLY



Mowing Them Down

Auto Sparks and Kicks

ALCOHOL REMOVES CARBON DEPOSIT.

Alcohol is a good carbon remover and for the purpose can be used in its denatured state, which is more economical and just as good. The quantity to use for a cylinder at one time would be equivalent to five or six tablespoonfuls. About the best way of applying it is in a sort of squirt gun composed of a rubber bulb in which there is a long, thin nozzle which can be directed against the walls of the combustion chamber and down on the piston head through a spark plug opening. This can be readily made by yourself and should have such a bend in it that it will be easy to insert into the opening for the spark plug and at the same time will be so shaped that the stream of liquid can be directed against any of the likely spots for carbon.

Carbon deposits are apt to accumulate in pockets and recesses of the cylinders and also on the piston heads. Sometimes on motors which have been allowed to go for a long time without having the carbon removed, it is deposited in a conical shaped mass on the head of the piston and very often the tip of the cone becomes incandescent and serves to prevent pistons setting properly.

OIL IN GEARCASES.

Grease or very heavy oil in the gearcases at this time of the year means noisy gears and excessive wear, according to W. J. Mead of the Chevrolet Chicago branch. During the cold weather gear cases packed with grease will cause the gears to run practically without lubrication, because the grease sticks to the walls of the housing and little, if any, gets to the gear teeth. Mr. Mead had occasion a few days ago to examine the differential housing and gearset of a car and found that the gears were running dry and had been for many weeks because the thick oil had stuck to the case. However, it was extremely difficult on the car in question to remove the differential case cover, and in order to keep the gears lubricated a little kerosene was poured into the housing, and in addition a pint of cylinder oil. The latter lubricant seems to be good for cold-weather use, as when it does thicken it becomes gelatinous and not hard. The use of an oil of light body also will show a power gain, because there is not so much load on the gears. The examination of the gearset is not a difficult matter, and at this time of the year every owner should flush the case with kerosene and fill to level with oil.

AUTO GAS DANGER.

Here's Coroner Hoffman's latest safety hint for automobile owners, evolved from an experience of his own in which his son and he were nearly overcome by fumes from the engine in a closed garage:

Get a dozen feet of cheap two-inch iron gaspipe. Cut a hole through the nearest wall of the garage and fix a wooden flap outside to cover the opening loosely.

When running the engine in the garage clap the gaspipe over the end of the muffler and let the car's burned gas go outside.

Then perhaps you will not be one of the persons killed this year by carbon monoxide, an odorless gas. Six persons were killed by it last year in Chicago.

TWO GOOD BODY POLISHES.

A much recommended body polish is made by mixing the following ingredients:

Turpentine	1 gallon
Paraffine Oil	1 pint
Oil of Citronella	3½ ounces
Oil of Cedar	1½ ounces

Another scheme is to use a mixture of boiled linseed oil and turpentine, applying it sparingly and rubbing absolutely dry.

SPRING SHACKLES.

The shackles or hangers of automobile springs should be lubricated properly. Rust often clogs up the small vents and excludes the oil. Use common kerosene occasionally in place of the oil, and these will be kept open.

CARBON BURNING PRECAUTIONS.

To prevent a fire when burning out carbon it is wise to remove all traces of gasoline from the carburetor, intake manifold and cylinders by shutting off the gasoline and then operating the motor until all fuel remaining in the carburetor is consumed.

Society Proceedings

ADAMS COUNTY

Annual Meeting

The annual meeting of the Adams County Medical Society was held Monday evening, December 13, 1915. Meeting called to order by President Whitlock. First order of business, reading of letter of state president, regarding plan for reorganization of Medical Department of the army. Resolutions read, and on motion endorsed. Next, secretary read communication from State Secretary Gilmore in reference to the necessity of concerted action by the State Society in medical matters, which came up before the legislature. Motion made and seconded that society instruct its legislative committee to forward a certain sum to Dr. Gilmore to be used for purpose mentioned in communication. Carried.

Then followed election of officers for 1916: President, Dr. Dan G. Stine, Quincy; first vice-president, Dr. J. L. Aleshire, Plainville; second vice-president, Dr. W. D. Stevenson, Quincy; secretary, Dr. Elizabeth B. Ball, Quincy; treasurer, Dr. C. E. Ericson, Quincy; censors, Drs. W. F. Pearce, Quincy; D. M. Knapp, Mendon; Kirk Shawgo, Quincy; defense committee, Dr. John A. Koch, Quincy; trustees, Drs. J. H. Pittman, Camp Point; C. A. Wells, Quincy; R. J. C. Christie, Quincy.

Drs. Christie and Beirne were appointed to escort the new president to his chair.

It was moved, seconded and carried that a committee be appointed to draw up resolutions on the death of Dr. W. A. Garner of Camp Point, and that a copy of the same be sent to the widow.

Before the meeting closed Dr. Christie suggested that a banquet be given to the retiring officers, and that this be an annual affair. Same was discussed.

On motion of Dr. Beirne, the chair was instructed to appoint a committee of three to call on the members to see whether or not the plan would be feasible, and if so, to have power to make all arrangements and dispense with scientific program at the January meeting. Seconded, carried.

Meeting adjourned at 10:30 p. m. and was followed by an appetizing luncheon served in the private dining room of the Hotel Quincy.

ELIZABETH B. BALL,
Secretary.

ALEXANDER COUNTY

The annual election of officers was held at the Association of Commerce rooms, December 16, 1915, and the following officers were elected for the year 1916: President, Dr. W. F. Grinstead; vice-president, Dr. J. W. Dunn; secretary and treasurer, Dr. H. A. Davis; member of board of censors, Dr. C. L. Weber.

After the election a banquet was served at the Colonial Hotel, followed by a social program.

FLINT BONDURANT,
Secretary.

CLARK COUNTY

Society met at the Court House, Marshall, Ill., December 9, 1915, at 1:30 p. m. Eleven members present.

A communication from the State Board of Health was read in regard to the U. S. Scientific Baby Contest for our county, March 4 to 11, 1916. The matter was discussed and it was decided to arrange for the contest. The following were appointed as a committee to plan same: S. C. Bradley, C. D. Ryerson, Joseph Hall, Geo. T. Rowland and L. H. Johnson.

Hall reported a case of amenorrhea with night sweats and fever for few days at first. The cause of the amenorrhea was not yet learned. It was suggested that tuberculosis or a cold simply or pelvic infection might be the cause.

Ryerson reported a case of fracture of skull with depression of area one inch across, which was raised and recovery followed.

J. W. Marlow read a paper on "Business Affairs of the Profession," Chap. II, Sec. 3, of by-laws, accusing doctors of being poor business men. We should show patrons that we earn our money and want it, not beg for our dues. Spoke of the dead-beat who will not pay; advised to learn him as cheaply as possible and quit him. Discussed the honest, honorable poor who, although tubercular, epileptic, syphilitic or in other ways physically, mentally or morally defective, has been permitted to marry; but he had little advice in regard to dealing with him, of course. Suggested mercy now and a law to prohibit such marriages for the benefit of future generations.

The discussion was participated in by all present and several men talked two or three times. Many practical ways of doing things were brought out: For each doctor to let every other member know who would not or had not paid him after proper effort was made to collect his account, then all doctors might know when a man owed one or more physicians and require him to pay as he went or expect to be left like the others were. That the training and equipment of the modern physician—instruments for diagnosis and treatment, auto, etc.—are much more expensive now than in the recent past and therefore reasonable fees and collection of same are absolutely necessary if the sick are to get the best they are entitled to. All bills should be paid when service is rendered or effort made to collect in thirty or sixty days just as the grocer and other business men do. When our oldest members began to practice their work was considered charity pure and simple, to be paid for as the preacher's services were, if patrons wanted to pay, and if they did not want to pay it was a matter of honor for the doctor to do him all the good he could and expect reward in the world to come. Now the active physician must spend all his

time and much money to keep up with the great advances and if he does not charge and collect for services he falls behind, and the sick he treats fail to receive their dues. That the practice of medicine is not as profitable now as it was fifteen or twenty years ago for the reason that doctors have been and are teaching people how to prevent sickness, and they are preventing it, making doctors too numerous in all localities for the amount of business. The old song that some doctors sing that they are too busy to attend the medical society or anything else is known to be a ridiculous joke by all physicians and laity as they all know that every doctor who gets around and does things has all the time he needs to do anything he wants to do. Medicines are much higher in price on account of the war, and doctors must charge more for giving out most kinds of medicine. Doctors are hustling around day and night and merely getting a living or a very little more from their practice, and many can scarcely get enough money in to pay their just and necessary expenses, notwithstanding the opinion so general among the patients that the doctor makes more and easier money than any one in the community. It is true a few physicians make little investments that prove profitable and others lose like other speculators do.

C. D. Ryerson read a paper on "Materia Medica and Therapeutics," stating several facts about elixirs and "specialties," their chemical changes on standing a few weeks, and insisting that they should not be used, as is the easy habit of many physicians, but instead recommending the use of standard preparations—powders, fluid extracts, tinctures, etc.—that the doctor or a consultant may know what effect to expect from the medicine given or to be given. Then discussed quinine, in particular, giving its physiologic actions on different organs in the body and its therapeutic effects in many diseases.

The hour being late a limited though intensely interesting discussion followed concerning the United States Pharmacopeia and National Formulary which are now legal standards of drugs to be used as guides for all who have anything to do with medicines.

COOK COUNTY

Chicago Medical Society

Regular Meeting, December 1, 1915.

1. "Swimming Tank Conjunctivitis," Harry S. Gradle. Discussion, Geo. F. Suker.
2. "The Roentgen Examination of the Appendix," M. J. Hubeny. Discussion, Joseph W. Rowntree.
3. "Co-operative Method of Diagosis," Carl Beck. Discussion. Ralph Webster, Truman W. Brophy, Adolph Gehrmann, Maxmilian Herzog.

Regular Meeting, December 8, 1915.

1. Radium Therapy. Remarks on the use of radium in dermatology and in deep-seated malignant disease. Illustrated with lantern slides, Frank E. Simpson. Discussion, K. A. Zurawski.
2. "The Value of Blood Transfusion in Children," Louis Fischer, New York City.
3. "Views Concerning Hemotherapy Based Upon the Experience of One Thousand Blood Transfusions," Henry W. Abelmann. Discussion, Victor Lespinasse.

Regular Meeting, December 15, 1915.

1. "The Newer Methods of Diagnosis in Urinary Surgery," Daniel N. Eisendrath. Discussion, Gustav Kolischer, J. Eisentaedt.
2. "The Diagnosis and Treatment of Gastric Ulcer in the Light of Modern Clinical Investigation," Frank Smithies. Discussion, Walter Hamburger.
3. "Treatment of Sacro-Iliac Dislocation" (lantern slides), Paul B. Magnuson. Discussion, Wm. E. Schroeder.

Chicago Ophthalmological Society

A regular meeting was held October 18, 1915.

The President, Richard J. Tivnen, in the Chair.

RETINITIS PROLIFERANS INVOLVING BOTH EYES.

Dr. E. K. Findlay reported this case. He said: "The patient, male, aged 26, came under my observation last May with the following history: In December, 1914, he consulted an optician on account of blurring of the sight of the right eye and received a prescription for glasses. A short time before I saw him he began to have blurring of vision of left eye and found difficulty in reading. Examination showed a slight divergence of the right eye. Vr. 2/60 Vl. 6/15. In the right eye the ophthalmoscope showed areas of hemorrhage and the formation of new tissue of a bluish white color, with new formation of vessels. In the left eye the media were clear but large retinal hemorrhages, more pronounced in the region of the disk, could be seen. A diagnosis was made of retinitis proliferans or retinitis hemorrhagic hyperplastica, of right eye and hemorrhagic retinitis in the left. A careful physical examination was made with negative results. There were no renal changes, blood pressure normal, Wassermann negative, and no reaction to the tuberculin test. The patient appeared in perfect physical condition. Treatment has failed in checking the course of the disease and we find at present the vision is reduced to RE. 1/20—LE. 3/60— the formation of connective tissue in the left eye also; with certain areas of new blood vessels.

This condition was first mentioned by MacKenzie in 1864 and the name of retinitis proliferans was given it by Manz in 1867. Numerous cases have been examined microscopically—showing the masses in the vitreous are connective tissue with newly-formed blood vessels, and in most cases there is hypertrophy of Mueller's fibers.

Nearly all cases resulted from hemorrhages in the retina though some authors deny the necessity of hemorrhages. In this case hemorrhages undoubtedly preceded the disease. Hemorrhagic retinitis is comparatively common, but this condition is seldom seen,

so there must be another factor in producing this new tissue. In nearly all the clinical cases there was some local or general circulatory disturbance. This case presents the typical picture of retinitis proliferans with the etiology obscure. There have been no inflammatory changes as iritis or cyclitis. Both eyes are involved and the disease has been progressive. Undoubtedly some toxic agent has caused a local disturbance of the retinal vessels and produced a so-called plastic retinitis.

GOLF BALL ACCIDENT.

Dr. A. N. Murray: A year ago the patient suffered an injury to the left eye, occasioned by a golf ball striking the eye-glasses which he was wearing. The upper lid was severely cut in a number of places; there was a ragged opening through the cornea near the nasal limbus, with prolapsed iris, and an opening into the sclera three or four millimeters long, about three mm. from the nasal limbus. He abscised the protruding portion of the iris. A week later a piece of glass, two mm. long and about one mm. thick, was found embedded in the cornea, just below the center and flush with the surface, having been present this length of time without having produced any symptoms whatsoever. In the meantime the lens had become totally cataractous, flocculent lens matter almost filling the anterior chamber. In attempting to remove the glass it prolapsed into the anterior chamber, and was extracted by lifting it up on the point of a keratome and seizing it with an iris forceps inserted through its wound in the cornea. Its position was determined by oblique illumination and contact with the keratome. The cataract absorbed in five or six months, when it was possible to see clear inside of the capsule owing to its attachment to the inner surface of the cornea at the site of perforation. The attachment of the anterior capsule to the cornea was severed with a Knapp knife-needle, and the posterior capsule needled so that a good opening was secured. Vision of 20/24 is obtained with a plus 10 sphere. The patient is now wearing this sphere before the other eye; with this very unusual combination he apparently obtains binocular vision. This is not constant, however, owing to a convergent strabismus of the injured eye, which developed soon after the injury and is still present part of the time. At first marked diplopia was present; it is now noticed only when the left eye converges. A very fine splinter of glass, visible only with the loupe and oblique illumination, is still embedded in the corneal tissue at the nasal limbus, with exudate behind it, but the condition apparently causes no irritation. It does not seem wise to remove it at present. The corneal scar is very irregular. There is no astigmatism present, although there was quite extensive scarring about the cornea.

In answer to a question the essayist stated that there is no involvement of the ciliary body.

DISCUSSION.

Dr. W. H. Peck, in discussing the paper of Dr. Murray, said he thought it was advisable to have an X-ray picture taken when splinters of glass had penetrated the eyeball, as thereby unsuspected pieces might be found, the pieces of glass in some cases being opaque to the Roentgen ray, according to their composition and size and distance from the piece of glass and the X-ray plate.

Dr. Suker asked whether, with the great difference in refraction and having binocular vision, an attempt had been made to determine whether there was superimposition of the images.

Dr. Murray replied that no such an attempt had been made.

Dr. Suker asked if it might not be possible that the patient has a suppression of one or the other images, which might thereby stimulate binocular vision.

Dr. Murray replied that he had simply assumed that the patient had binocular vision.

Dr. H. S. Gradle says that it does not seem possible that this patient could have true binocular vision, with a dioptric difference at least of 12 diopters in the two eyes. In such a case binocular vision would not be likely to be present, owing to this dioptric difference and to the subsequent difference in the size of the retinal images, but stereoscopic vision might be present and the optical axes might be parallel.

Dr. Murray, in answering questions regarding binocular vision, said he had not made all the tests possible to determine this matter; that the patient did not have any difference in the size of the retinal images; that these various tests with reference to binocular vision will, however, be made by him. With the exception of this one sliver of glass, there does not seem to be any glass in the eye now. There has been no photophobia nor irritation during the entire year. No effort has been as yet made to determine whether the patient has accurate depth perception.

Dr. Willis O. Nance said that five years ago he had reported to this society a case of injury to the eye by a broken spectacle lens. The literature at that time showed only two or three such cases. They have been, however, reported somewhat more frequently since then. Injuries to children from broken glass lenses seems to be exceedingly rare, considering the number of spectacles worn.

President Tivnen said that Potter and others say that whether glass in the eye can be seen by the use of the X-ray depends upon the composition of the glass. Sometimes it becomes a medico-legal question of importance, whether an X-ray examination should have been made.

Dr. Michael Goldenburg reported the case of a piece of steel or iron having entered the eye some ten years previously. He first saw the case six years ago, when he noted the piece of metal lying flat upon the anterior surface of the iris. Two months ago there was no sign of it.

Dr. George F. Suker deprecated any attempt to remove surrounding tissue by its stationary position and the contraction and dilatation of the iris around it. He saw the case again two months ago and there was absolutely no sign of the metal ever having been present.
this small remaining splinter of glass, because this glass is undoubtedly lead free and non-irritating and will not corrode. Also because the glass has become so well encapsulated and is immobile and the place of its location also precludes mobility and traction upon it, and finally there is no evidence of irritation. The exudate is probably thoroughly organized by now. Unless symptoms of irritation should appear, interference should not be undertaken.

Dr. M. H. Worthington had had a case of injury to the anterior surface of the cornea in a patient who was injured while playing tennis, but the lens of his glasses being struck and broken by a tennis ball. He also referred to the case of a young man who had received cuts on his cornea from broken glass caused by a missile being thrown through the window of a street car on which he was riding.

AN OBSCURE CLINICAL CASE.

Dr. M. H. Worthington reported a case that was of interest to him on account of the numerous outbreaks of inflammation in a pair of diseased eyes, that had been under his observation for several years.

The patient, a young woman, was 15 years old in

1909, when he first saw her. She was anemic in appearance and of a strumous diathesis. Scars on the side of her neck showed the remains of suppurating cervical glands. Her mother was well and healthy, but her father was not strong, and at present is confined to his bed with pulmonary tuberculosis. At that time she had a double keratitis, which was diagnosed as interstitial, but which he now believes to have been tubercular. After several months treatment this quieted down, leaving nebulæ and vision of 20/80 in each eye, but no remnants of vessels to be seen in the corneal tissue under the loupe.

The patient was not seen by him again until 1913, although she stated that during that interval she had suffered recurrent attacks of keratitis in both eyes.

At this time she has several fresh spots in the corneal tissue and eyes are highly inflamed.

In September, 1913, she had a fascicular keratitis in her right eye which was very slow in healing, and had to be cauterized before healing took place. In the following year she had phlyctenular keratitis in the left eye.

The patient was seen again in August, 1915, when she had an inflammation in the right eye, and a swelling or nodule at the temporal side of the corneoscleral junction in the sclera, and a typical episcleritis. This condition has improved slowly.

The speaker inquired whether any of the members present had had any experience with guaiacol as a subconjunctival injection in these cases, in aqueous solution 1/100, stating that he was disposed to make use of it in this present case.

(*To be continued*)

Greene County

The annual meeting of the Greene County Medical Society was held in the city hall at Roodhouse, Friday, December 10, 1915.

Meeting was called to order by President L. O. Frech at 11:30 a. m.

Twelve members present. Visitors: Drs. W. P. Elmer of St. Louis, Mo., W. D. Chapman of Sylvis, and John Botkin of Roodhouse, Ill.

The minutes of the previous meeting were read and approved.

Election of officers resulted as follows: President, C. R. Thomas, Roodhouse; vice-president, R. O. Hawthorne, Roodhouse; secretary and treasurer, H. A. Chapin, Whitehall; censor (three years), H. W. Smith, Roodhouse.

C. R. Thomas, member of the board of censors, offered his resignation and upon motion the same was accepted. C. B. Foreman was elected to fill the unexpired term. H. A. Chapin was elected delegate and L. O. Frech alternate delegate to the State Society for two years. The president appointed the following legislative committee: L. O. Frech, R. O. Hawthorne and Howard Burns, after which the Society adjourned for dinner.

Called to order at 1:45 p. m.

Communications from the secretary of the state board of health regarding "Baby Week" March 4th to 11th and "Baby Health Conferences" was read, and on motion the following committee was appointed to assist in the holding of the contest: F. N. McLaren, H. W. Smith, C. B. Foreman, H. W. Gobble and G. W. Ross.

H. W. Smith discussed the new state law which permits the levying of a tax for the building and maintenance of a tuberculosis sanitarium in each county. The subject was discussed at length by several present and the following resolution was introduced by A. W. Foreman:

Resoved, That the Greene County Medical Society endorse the act of the legislature authorizing each county to erect and maintain a sanitarium for the care of tuberculosis.

The same was unanimously adopted. On motion of H. W. Smith the officers of the Society were instructed to call a special meeting of the Greene County Medical Society to be held in White Hall at an early date for the discussion of the sanitarium.

The secretary reported the death of Dr. W. C. Day, and on motion H. W. Chapman was appointed a committee of one to present suitable resolutions, and the following were unanimously adopted:

Whereas, In the course of Nature our former friend and colleague, W. C. Day, M. D., of White Hall, having finished his labors on earth, has passed from the activities of this life; be it

Resolved, That the Greene County Medical Society desires hereby to record a sense of loss felt by all its members and to express its admiration of the many admirable professional and social qualities possessed by the deceased.

Further, In view of the great suffering endured by him so heroically for many years, we are thankful to a merciful Providence for his release; be it further

Resolved, That these resolutions be spread upon the minutes of this society and that a copy be sent to the members of the family of deceased.

On motion of R. O. Hawthorne the courtesies of the Society were extended to W. P. Elmer, W. D. Chapman and John Botkin.

Dr. W. P. Elmer of St. Louis read a paper on "Syphilis of the Cardio-Vascular System." The paper was a very carefully prepared and a most interesting one, and the pathological specimens were of unusual interest, showing clearly the effect of syphilis upon the cardio-vascular system. Upon motion, Dr. Elmer was extended the thanks of the Society. The paper was discussed by all present.

Censors reported Carrollton as next place of meeting, to be held Friday, February 11, after which the Society adjourned.

H. A. Chapin, Secretary.

IROQUIS-FORD COUNTIES

The Iroquois-Ford Medical Society met at annual dinner at the Iroquois House, Watseka, Ill., Decem-

ber 7, 1915. There were twenty-two members present. After dinner and smoke the members were conveyed in autos to the new Iroquois Hospital, where, after being shown through the hospital, the meeting was called to order by the president, R. N. Lane, M. D.

The minutes of previous meetings were read and approved.

Dr. Trezono's name was presented for membership and referred to board of censors. Dr. F. M. Blome was elected to membership.

The following officers were elected for the year 1916: President, Dr. Martha Anderson; vice-president, Dr. O. O. Hall; secretary and treasurer, Dr. D. W. Miller; censor, Dr. R. N. Lane; delegate to state society, Dr. George W. Ross, first alternate, Dr. S. M. Wylie; second, Dr. H. W. Wood; third, Dr. C. H. Dawsett; fourth, Dr. J. L. Shawl.

The first paper on regular program was read by Dr. C. V. Luke on "Asthma." Discussion was opened by Dr. S. M. Wylie, followed by Drs. Hall, Brown, Hilmer and Mellen, Dr. Luke closing the discussion.

"Practice Among the Eskimos" was presented by Dr. Bruce H. Brown and "Our Hospital," by Dr. George W. Ross.

On motion the following committee was appointed to draft resolutions expressing sentiments of the society regarding the new hospital to be presented to Mrs. Donovan: Drs. S. M. Wylie, T. N. Boue and O. O. Hall.

On motion the following committee was appointed to arrange for a clinic at our next Watseka meeting the first Tuesday in December, 1916: Drs. George W. Ross, Horace Gibson and W. F. Buckner.

On motion the society accepted the invitation to hold the next June meeting in Milford in place of Gilman.

The committee on resolutions presented the following: "We, the members of the Iroquois-Ford Medical Society, in convention assembled, after a thorough inspection of the Iroquois County Hospital, embracing as it does the latest and best of hospital construction, congratulate the city of Watseka and county of Iroquois on having such a splendid institution in their midst.

"Hospitals are the outgrowth of modern civilization. They are a necessity in every community. When they are properly equipped wtih the latest appliances to meet the grave emergencies of accident and disease.

"Hundreds of lives can be saved that would be sacrificed when patients have to be transported long distances before they can receive proper treatment.

"We especially commend as worthy of emulation the generosity and munificence of Mrs. Anna Donovan, whose liberal contribution made the erection of this hospital possible.

"It is to be hoped that her humanitarian spirit will find imitators in communities that have individuals who are able to build them if they realize their responsibilities to their fellow man."

Twenty-two members were present at the meeting. Meeting adjourned.

D. W. Miller,
Secretary.

JACKSON COUNTY

The fourth quarterly meeting of the Jackson County Medical Society met in the Jackson Club rooms at Murphysboro, Ill., Thursday, December 16, 1915. This being the last meeting of the year the election of officers was in order.

The following officers were elected: Dr. Harriet N. Daniel, president; Dr. W. A. Brandon, vice-president; Dr. C. M. Thompson, secretary-treasurer; Dr. A. R. Carter, advisor. Dr. John Bennett was appointed a member of the board of censors.

The society was honored by having present Dr. C. C. Morris of the Baptist Hospital of St. Louis, who read an interesting paper on "Uterine Anomalies" and presented a specimen of a double uterus. A discussion by Dr. Molz of Murphysboro and Dr. Mitchell of Carbondale followed.

Dr. J. H. Hrabik then read a paper on "The Diagnosis and Treatment of Syphilis," which was followed by a lively discussion by many of the members present. Twenty members were present; visitor, Dr. O. B. Thompson, of Carbondale.

The next meeting will be held in Murphysboro, Ill., Thursday, March 16, 1916.

Louis R. Wayman,
Secretary.

LAKE COUNTY

The Lake County Medical Society held its regular monthly meeting in the Y. M. C. A. building at Waukegan, October 20, 1915, and from all reports it was one of the best meetings held by the society in years.

The Second District Medical Society of Wisconsin, comprising the counties of Racine, Kenosha and Walworth, were guests, as were also Dr. Clifford G. Grulee, Prof. Pediatrics, and Dr. N. Sproat Heaney, assistant professor of obstetrics, both of Rush Medical College, Chicago; Medical Director F. A. Berryhill, U. S. N.; Surgeon C. E. Ryder, U. S. N.; and Past Assistant Surgeon T. W. Raison, U. S. N.

The meeting opened at noon with a banquet served by the ladies of the Presbyterian church, after which Dr. Ullmann gave a very choice case report.

Dr. Grulee gave a very interesting talk on the subject of "Infant Feeding." He is an authority on this subject, and his talk contained many new and original ideas.

Dr. Heaney gave a practical demonstration of his machine for the administration of nitrous oxid in labor, followed by an interesting lecture on "Gas Analgesia in Obstretrics."

Following the papers a general discussion was held by the members. A vote of thanks was tendered Drs. Grulee and Heaney for their able and instructive talks.

Twenty-seven Lake County members were present.

Next meeting will be held in Waukegan early in November.

Regular Meeting, November 18, 1915.

Regular meeting of the Lake County Medical Society was held in the Commercial Club Rooms, Waukegan, Thursday evening, November 18, 1915. Minutes of the September and October meetings were read and approved. Dr. Ullmann reported favorably for committee on arrangements.

The question of adopting a uniform minimum county fee schedule was discussed and same was left in the hands of the ways and means committee, who were instructed to prepare and bring before the next meeting of the society a specimen schedule.

Drs. Barker, Foley and O'Neil gave some very interesting case reports.

Sixteen members present.

Visitors: Drs. Bollman and Radcliffe.

Next meeting to be held in Highland Park, Thursday evening, December 9.

DR. C. S. AMBROSE,
Secretary.

MADISON COUNTY

The annual election of the Madison County Medical Society, held on December 3, 1915, resulted as follows: President, Dr. R. D. Luster, Granite City; vice-president, Dr. J. Bernard Hastings, Granite City; secretary, Dr. E. W. Fiegenbaum, Edwardsville; treasurer, Dr. R. S. Barnsback, Edwardsville; Medico-legal member, Dr. S. T. Robinson, Edwardsville; board of censors, Dr. J. A. Hirsch, Edwardsville, to serve three years.

E. W. FIEGENBAUM,
Secretary.

UNION COUNTY

The Union County Medical Society was called to order by President A. J. Lyerle at 8 p. m. at the Stinson Memorial Library, Anna, Ill., December 8, 1915.

On roll call twenty physicians answered to their names, and the speaker of the evening, Dr. C. W. Lillie of East St. Louis, Ill.

Seven dentists, by special invitation, and Rev. W. O. Shewmacher, were present.

Meeting opened by invocation by Rev. W. O. Shewmacher.

Owing to some members wishing to leave on 9 o'clock train the regular order of business was dispensed with and Dr. Lillie being introduced read his most excellent paper on "Cancer," which was listened to with great interest by all present. Dr. Lillie brought out the point of most importance, that of educating the public about cancer and other diseases. He thought the proper time had arrived that the physician should teach the people so that they would not run off to every "quack" that came along. The paper was discussed by Drs. J. I. Hale, G. W. Morrow, J. A. Hale and R. A. Goodner.

After some discussion on the question of "Organization by Drs. Lillie, J. I. Hale, L. D. Keith and W. E. Lingle the following officers for 1916 were elected. President, G. W. Morrow, Anna; vice-president, F. L. Lingle, Cobden; secretary-treasurer, E. V. Hale; censors, Drs. S. C. Martin and S. B. Norris, Anna, and W. E. Lingle, Cobden.

On motion Dr. Lillie was extended a vote of thanks for his able paper and was elected to honorary membership to the Union County Society.

After some discussion as to meeting time and program work the secretary announced his disappointment in not having the pleasure of introducing Dr. W. H. Gilmore, state secretary, at this meeting, and was instructed to try and get Dr. Gilmore to be present at the next meeting.

Nothing further to be brought before the meeting the society adjourned to meet on the last Wednesday of Jauary, 1916.

E. VINCENT HALE,
Secretary.

VERMILION COUNTY

The Vermilion County Medical Society met in the city council chamber, Danville, December 13, 1915, and was called to order by Vice-President James. Minutes of the two preceding meetings were read and approved.

Drs. R. N. Sherman, Fairmount, and T. P. Williams, Westville, were unanimously elected to membership. The application of Dr. I. E. Burtnette was read and referred to the board of censors.

The secretary's annual report was then read, followed by the treasurer's report. On motion, they were accepted and placed on file.

Communication from the state secretary was read, in which communication he asked that as much money as possible be contributed to the legislative committe of the Illinois State Medical Society as they were in need of means to combat vicious bills which were being enacted by the state legislature. On motion, the society pledged itself to give $20 to this cause.

Dr. E. E. Clark was elected "Advisor" to the medico-legal committee to report to Dr. C. B. King, 3938 Jackson boulevard, Chicago.

Communication from State President C. W. Lillie, asking for our approval of a plan for the reorganization of the medical department of the U. S. army, was read. On motion, we endorsed the plan and the secretary was ordered to fill out the blank form to that effect.

The program of the evening opened by a paper, "The Temptations of the Physician," by Dr. Geo. T. Cass. The paper was very interesting and some good reasoning was brought out on some important subjects. This being the "annual" meeting, the president's address was delivered by Vice-President James.

Election of officers for the coming year resulted as follows: President, Dr. A. E. Dale, Danville; vice-president, Dr. H. F. Dice, Ridgefarm; secretary-treasurer, Dr. O. H. Crist, Danville; censor, Dr. J. M. James, Henning; delegate to state meeting, Dr. R. A.

Cloyd, Catlin; alternate to state meeting, Dr. O. H. Crist, Danville.

After adjournment a buffet luncheon was served.

O. H. Crist,
Secretary.

Personals

Elgin physicians held a banquet in honor of Dr. Harriett B. Ward, December 3.

Dr. Clarence M. Cheadle, Ashton, is at Nish, Serbia, recovering from typhus fever.

Dr. Warren R. Rainey, Salem, a member of the Chicago unit, has returned from Flanders.

Dr. Marion E. Reed, East St. Louis, has returned after eight years in the Samoan Islands.

Dr. Orie F. Schullian has been elected secretary of the Woodruff Memorial Sanatorium, Quincy.

Mrs. Bertha Logan, Chicago, has been elected superintendent of the Rockford Municipal Sanatorium.

Dr. H. J. Gahagan says the joke that bald headed men are never nutty is old enough to have whiskers.

Dr. Harry H. Whitten has been appointed local surgeon for the Aurora, Elgin and Chicago Railroad at Batavia.

Dr. Emil Lofgren, Rockford, has been elected president of the Winnebago County Antituberculosis Association.

Dr. Gottlieb A. Lurie, who has been on duty with the Rockefeller Commission in Serbia fighting typhus fever, has returned home.

Dr. Henry L. Metcalf, Mount Carroll, who has been critically ill with septicemia in the Freeport General Hospital, is reported to be improving.

Dr. John P. Benson has been elected president and Dr. Herbert S. Worthley, secretary, of the medical staff of St. Joseph's Hospital, Joliet.

Dr. William A. Clark sailed for Belgium, December 4, to be director of an American Red Cross unit at Hospital L'Ocean, La Panne, Belgium.

Dr. Philip S. Chancellor, who went to Europe last May as medical director of the Chicago unit, sailed from France on his return on December 25.

Dr. Wilfred H. Gardner, Bloomington, who has been serving as surgeon in a British Hospital in London for almost a year, sailed for the United States December 8.

Drs. Grant Houston, Herbert S. Worthley, James A. Clyne and Philip Le Sage have been elected members of the medical staff of St. Joseph's Hospital, Joliet.

Dr. Otto T. Freer delivered an address before the German Medical Society of New York on December 6. His subject was "Opening the Frontal Sinus Through the Nose."

Dr. Rollin T. Woodyatt of the Sprague Laboratory for Medical Research lectured December 8 in the amphitheater of the Cincinnati General Hospital on "Newer Aspects of Diabetes."

Dr. Frederick W. Werner has been elected chairman of the active medical staff of the Silver Cross Hospital, Joliet. Dr. Grant Houston has been elected vice-chairman of the staff and Dr. Roy B. Leach, secretary.

Dr. Solomon Jones, of Danville, formerly president of the Vermilion County Medical Society, announces that he is taking a year of postgraduate work in New York, after which he will limit his practice to diseases of the eye, ear, nose and throat.

Dr. C. St. Clair Drake, secretary of the state board of health, represented the board as delegate to the second Pan-American Scientific Congress at Washington, Dec. 27 to Jan. 8. On his return from Washington he contracted with New York firms for supplies for the Schick diphtheria test.

News Notes

—The 34,730 deaths in Chicago in 1915 give a death rate of 14.19 per 1,000 population as in 1914. The 1,112 deaths in the last week of December were largely due to the epidemic of pneumonia that swept the country from coast to coast.

—Plans for a $1,000,000 addition to the Cook County Hospital which is to contain a model hospital kitchen, have been approved by members of the Board of County Commissioners.

—The supply of trained nurses and attendants is said to be entirely insufficient for the recent great demand. Nurses registries report many calls both in hospital and private practice that cannot be filled.

—A free dispensary has been opened in connection with St. John's House, Ridgely, Springfield. The institution will be open on Saturdays

from 10 to 12 o'clock, and a physician and nurse will be in regular attendance.

—Examinations for appointment in the Medical Corps of the Navy will be held on or about February 23, 1916, in Chicago and elsewhere. Full information may be obtained from the Surgeon General of the Navy, Washington, D. C.

—The town of Batavia was practically quarantined last month because of a diphtheria epidemic. All churches and schools were closed and all persons less than 19 years of age ordered to remain in their own homes whether they had the disease or not.

—The December grand jury in Chicago, impressed by the large number of crimes against children, recommended that the legislature be urged to pass a law similar to laws now in force in Indiana and Wisconsin whereby such criminals can be sterilized.

—The medical department of LaSalle City Library has recently been moved to the Hygiene Institute, LaSalle, and is now known as the LaSalle Peru Medical Library. The library has at present 703 bound volumes and about 100 unbound periodicals.

—The American Red Cross has inaugurated a campaign to secure 10,000 members in Chicago. At present the membership in the American Red Cross is 20,000 while the Japanese Red Cross has a membership of 2,000,000 and the German Red Cross of 1,000,000.

—Physicians Drug News and Office Practitioner has been acquired by The Critic and Guide Company and will be consolidated with The Critic and Guide beginning with January, 1916. The consolidated journal will remain under the editorship of Dr. William J. Robinson.

—The fresh air cars were withdrawn by the Chicago city council transportation committee just as we went to press last month. Our reference to the cars in the December JOURNAL had a lame Latin quotation which was promptly indicted by one of our classical readers.

—The building at Wood and Selden Streets, Chicago, erected at a cost of $200,000 by Julius Rosenwald, housing the West Side Charities and to be used as a general administration building by the Associated Jewish Charities, was dedicated with formal ceremonies on November 28.

—The Twelfth Annual Conference on Medical Education, Public Health and Legislation will meet at the Congress Hotel, Chicago, February 7 and 8, 1916. February 9 the Federation of State Medical Boards of the United States and the Association of American Medical Colleges will meet.

—Examinations for the position of Assistant Surgeon in the Public Health Service will be held in Washington, D. C., and in the Marine Hospitals, January 24, 1916. For invitations to appear before the board of examiners, address "Surgeon-General, Public Health Service, Washington, D. C."

—Two Elgin physicians have figured in sensational cases recently. Dr. James M. Campbell and wife secured a divorce November 5 with a financial settlement by mutual agreement which was later reopened by Mrs. Campbell on the showing that he had disposed of mining stock for about $200,000.

Dr. C. E. Sisson, divorced by his wife last summer, married a nurse, Miss Vollman, within ten days at Los Angeles. This marriage was annulled December 11 by Judge Shopen, under the Illinois law prohibiting remarriage within one year after divorce.

—The deaths in Chicago from January to November inclusive gave a death rate as low as the lowest ever recorded, 13.85 per thousand living, in 1904. And this included the 812 Eastland deaths. The prevalence of pneumonia in December prevented the city from having the lowest rate of any large city.

—Health Commissioner Robertson would like to have a physician and nurse in each public school, but the department budget will not allow this additional expense and it is hardly probable that the board of education will appropriate the amount necessary for this purpose, estimated at $250,000, valuable as the services of the physicians and nurses would unquestionably prove.

—The Bollinger case is dragging its slow length through the press but nothing has developed of an unexpected nature. The attorney general recommended that States Attorney Hoyne bring the matter to the attention of the grand jury, but Mr. Hoyne held that the doctor in the case was within his rights in refusing to operate.

The ethical end of the case is being handled by the Chicago Medical Society in due course.

—A Polish paper prints the following cute little verse on swatting the fly:

Jada wloska, jada droga—
Siostrzyezke i brat,
I nadziwic sie nie moga,
Jaki piekny swait!

Singing this while swatting is said to make the flies much easier to swat.

—*The Madison County Doctor.*

—At the annual meeting of the Institute of Medicine of Chicago, December 7, Drs. Thomas J. Watkins, Robert B. Preble and Frank Cary were elected members of the board of governors for a term of five years. The annual address was delivered by the president, Dr. William E. Quine, on "Medical Teachers and Teaching," and Professor Stieglitz of the University of Chicago and Professor Kendall of Northwestern University spoke on the "Relation of the Institute to Medical Progress."

—At the forty-second annual meeting of the North Central Illinois Medical Association held in Peoria, December 18, Dr. James A. Marshall, Pontiac, was elected president; Dr. Frederick W. Wilcox, Minonk, first vice-president; Dr. David S. Conley, Streator, second vice-president, and Dr. George A. Dicus, Streator, was reelected secretary-treasurer. Two of the oldest medical men in the state, Drs. William O. Ensign, Rutland, and James Tweddale, Washburn, were present at the meeting.

—A memorial service for the late Dr. Green Vardiman Black, dean of the Northwestern University Dental School, who died August 31, was held in the Hotel LaSalle, December 14, by the Chicago Dental Society. Addresses were made by President Harris of Northwestern University, who spoke of Dr. Black as the dean of the dental department of that institution; Dr. Fred B. Noyes, who paid tribute to the student, investigator and inventor; Dr. C. N. Johnson, who spoke on "The Teacher and Writer"; and Dr. Thomas L. Gilmer, the subject of whose address was "The Man and Friend."

Marriages

Arrie Bamberger, M. D., to Miss Amelia Miriam Hitzelberger, both of Chicago, November 25.

Joseph H. Bloomer, M. D., to Mrs. Idella M. McDavitt, both of Quincy, Ill., November 17.

Clarence Gilbert Goodwin, M. D., Chicago, to Mrs. Minnie Starr Grainger of Belvidere, Ill., November 24.

Louis Van Patten, M. D., St. Charles, Ill., to Mrs. Caroline Gillette of Aurora, Ill., at Elgin, Ill., November 25.

Clara Pauline Seippel, M. D., to Robert A. Widdowson, both of Chicago, in Minneapolis, December 11.

Clarence Lewis Walton, M. D., to Miss Clara Marek, both of Chicago, December 2.

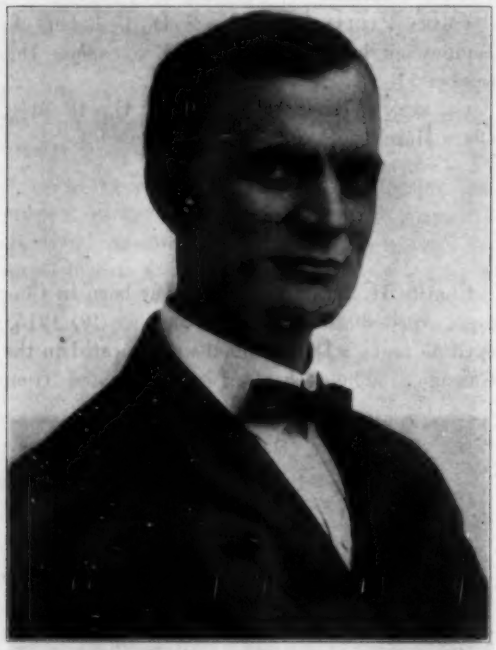
Obituary

Charles H. Bushnell, M. D., was born in Chicago, April 30, 1860; died December 19, 1915; aged 55 years. Dr. Bushnell was educated in the Chicago Public Schools; was graduated from

Charles H. Bushnell, M. D.

Bennett Medical College, Chicago, in 1896. He was attending gynecologist, St. Anthony's Hospital and Orphanage; attending gynecologist Frances E. Willard Hospital; attending surgeon Chicago Union Hospital; attending obstetrician,

Cook County Hospital; head of department of gynecology and obstetrics, Bennett Medical College. He was a member of the Chicago Medical Society, Illinois State Society, and American Medical Association; a member of Oriental Masonic Lodge, LaFayette Chapter, Apollo Commandry, Medinah Temple, Mystic Shrine.



WILLIAM FRANCIS STOKES, M. D.
Internist, West Side Hospital; Instructor of Medicine, Chicago College of Medicine and Surgery.

Dr. William Francis Stokes, an honored member of the medical fraternity of Chicago, died at his residence, after a ten days' illness, on the morning of December 26. Comparatively few men ever occupy the place in the hearts of either the laity or the fraternity, held by Dr. Stokes. His genial good-nature, his sympathy for others, his willingness to serve, his humaneness, his loyalty, together with his skill, gathered to him a host of friends.

Dr. Stokes was graduated from Rush Medical College in 1897, since which time he lived and practiced in Chicago. He was a member of the Chicago Medical Society, The Illinois Medical Society, and the American Medical Association.

Dr. Stokes was a member of Cleveland Lodge A. F. and A. M., and also of Washington Chapter. His remains were interred in Forest Home Cemetery, December 28.

Deaths

LEVI ORMSBY JOHNSON, M. D. University of Michigan, Ann Arbor, 1868; aged 74; died at his home in Chicago, November 15.

ALBO MILLER, M. D. Jenner Medical College, Chicago, 1904; aged 51; died at his home in Chicago, December 1, from heart disease.

ALFRED A. WEBER, M. D., University of Vienna, 1885; aged 57 years; died at his home in Chicago, Dec. 19, 1915; from heart disease.

LEOPOLD CHARLES SCHULKE, M. D. St. Louis College of Physicians and Surgeons, 1905; aged 32; died at his home in Decatur, Ill., November 19.

HENRY MILLER HEWITT, M. D. Rush Medical College, 1878; of Franklin Grove, Ill., and Chicago; died at the home of his aunt in Dixon, Ill., November 29.

GEORGE BESSON MCCOSH, M. D. Rush Medical College, 1880; aged 58; a practitioner and druggist of Morris, Ill.; died at his home in that place, December 5.

JOSEPH D. TUTHILL, M. D. Bennett Medical College, Chicago, 1881; aged 87; a practitioner for more than sixty years; died at his home in Chicago, November 26.

FRANK JINDRA, M. D., Reliance Medical College, Chicago, 1911; aged 29 years; died at the Frances E. Willard Hospital, Chicago, Dec. 25, 1915, of acute nephritis.

MAXIMILLIAN BROENING, M. D. New York University, New York City, 1868; aged 75; formerly secretary of the Clinton County (Ill.) Medical Society; died at his home in Carlyle, Ill., November 3.

WILLIAM C. DAY, M. D. Missouri Medical College, St. Louis, 1861; aged 78; emeritus professor of obstetrics in the American Medical College, St. Louis; died at his home in White Hall, Ill., November 13.

JOHN WALLACE ALLISON, M. D. Cincinnati College of Medicine and Surgery, 1877; aged 62; twice a representative from Kankakee County in

the Illinois State Legislature; died at his home in Essex, Ill., December 4.

FRANCIS C. KIENZLE, M. D. Northwestern University Medical School, Chicago, 1909; aged 39; a Fellow of the American Medical Association; died in his apartment in Chicago, November 15, from paratonsillar abscess.

JOHN ANTIS, M. D. College of Physicians and Surgeons of the Western District of New York, Fairfield, 1837; aged 98; since 1845 a practitioner of Grundy County, Ill.; died at the home of his daughters in Mazon, Ill., November 25.

LAURA J. ROSS WOLCOTT, M. D. Women's Medical College of Pennsylvania, Philadelphia, 1856; aged 82; said to have been the third woman in the United States to receive a degree in medicine; died at her home in Chicago, December 8.

ELLIS HENRY BISHOP, M. D. Bennett Medical College, Chicago, 1905; aged 43; a Fellow of the American Medical Association; died at his home in Neponset, Ill., December 5, from an overdose of medicine taken for the relief of acute gastritis.

CARL MARTINUS NIELSON, M. D. University of Copenhagen, Denmark, 1885; Bennett Medical College, Chicago, 1893; aged 59; president of the Scandinavian-American Medical Society, Chicago; died at his home in that city, December 14.

JOHN CALVIN WEBSTER, M. D. Harvard Medical School, 1867; aged 72; a member of the Illinois State Medical Society; a veteran of the Civil War; for forty-eight years a practitioner of Chicago; died at his home in Chicago, November 15.

ADOLPH DECKER, M. D. University of Wurzburg, Germany, 1881; aged 56; at one time president of the German Medical Association, Chicago; noted as a chess player and composer of chess problems; died at his home in Chicago, November 20.

ERNEST DAVID DISBROW, M. D. Rush Medical College, 1880; aged 57; a member of the Illinois State Medical Society; formerly secretary of the Grand Rapids (Mich.) Academy of Medicine; died at his home in Chicago, December 4, from cerebral hemorrhage.

JOHN A. KIRKLAND, M. D. Jefferson Medical College, 1885; aged 59; a Fellow of the American Medical Association; for many years a member of the school board of Cambridge, Ill., and a well-known ornithologist; died at his home in Cambridge, December 10.

JOHN A. BRILL, M. D. Cincinnati College of Medicine and Surgery, 1884; aged 64; a member of the Illinois State Medical Society and a well-known practitioner of the northwest side of Chicago; died at his home in that city, December 4, from cerebral hemorrhage.

WILLIAM A. GARNER, M. D. College of Physicians and Surgeons, Keokuk, Ia., 1885; aged 55; a Fellow of the American Medical Association; local surgeon of the Wabash System at Clayton, Ill.; died at his home in Clayton, November 14, from organic heart disease.

HENRY MANNING FISH, M. D. Hahnemann Medical College, Chicago, 1900; aged 62; a Fellow of the American Medical Association and American Academy of Ophthalmology and Oto-Laryngology; a well-known specialist; died at his home in Chicago, December 11, from pneumonia.

ARTHUR IRVING MCCUMBER, M. D. Rush Medical College, 1905; aged 38; of Lewiston, Ill.; a patient at the Wilgus Sanitarium, Rockford, on account of nervous breakdown; threw himself under an interurban car about a mile from Rockford, November 20, and was instantly killed.

MERRITT WALTER HALL, M. D. Chicago College of Medicine and Surgery, 1910; aged 31; a Fellow of the American Medical Association; of Chicago; died at the home of his mother in that city, December 4, from the effects of poison believed to have been self-administered with suicidal intent.

DANIEL BERRY, M. D. Jefferson Medical College, 1866; aged 80; a veteran of the Civil War, in which he served as assistant surgeon of the Eighty-Seventh Illinois Volunteer Infantry; later a practitioner and druggist of Carmi, Ill.; died at his home in that city, November 19, from cerebral hemorrhage.

RALPH B. MCCLEARY, M. D. Hahnemann Medical College, Chicago, 1878; aged 82; for nearly half a century a practitioner of Monmouth, Ill.; a veteran of the Civil War; coroner of Warren County from 1869 to 1880; died at the home of his daughter, in Monmouth, November 12, from senile debility.

FAYETTE KENT WALLER, M. D. Miami Medical College, Cincinnati, 1878; aged 68; a veteran of the Civil War; and for many years a practitioner of Wabash, Calhoun and Madison counties, Ill.; who had been an inmate of the Odd Fellows Home, Mattoon, Ill., for seven years; died in that institution, November 19, from cerebral hemorrhage.

JOHN ANDERSON DAVIS, M. D. University of Michigan, Dept. of Med. and Surg., 1873; aged 68; a Fellow of the American Medical Association; member of Illinois Central, Yazoo and Mississippi Valley Surgeons Assoc.; member of Illinois Central Railway Surgeons Association; District Surgeon Illinois Central Railway, 1899-1915; a practitioner at Deland, Ill., 1873-1877; in Pennsylvania, 1877-1884; at Deland, 1884-1899; at Farmer City, Ill., 1899-1915; died at his home, December 20, 1915, from arteriosclerosis.

WILLIAM S. HOLLIDAY, M. D. Louisville (Ky.) Medical College, 1874; aged 65; of Monmouth, Ill.; a member of the Illinois State Medical Society and for more than forty years a practitioner of Warren County, Ill.; county physician of Warren County from 1876 to 1882; and coroner from 1881 to 1883; for more than twenty-five years a member of the city council of Monmouth; died in the Monmouth Hospital, November 6, from pulmonary embolism, two weeks after an operation for appendicitis in which a gangrenous appendix was found.

NEW AND NONOFFICIAL REMEDIES.

During October the following articles were accepted by the Council on Pharmacy and Chemistry for inclusion with New and Nonofficial Remedies:

Mallinckrodt Chemical Works: Betanaphthyl Salicylate, M. C. W.

Merck and Co.: Betol; Bismuth Tribromphenate, Merck; Eutylchloral Hydrate, Merck; Ethyl Bromide, Merck; Homatropine Hydrochloride, Merck; Sodium Cacodylate, Merck.

H. K. Mulford Co.: Hay Fever Vaccine, Mulford: 4 syringe packages (0.0025 mg., 0.005 mg., 0.01 mg. and 0.02 mg.) and 1 syringe package (0.02 mg.)

Merck and Co.: The Council has recognized Merck and Co. as selling agent for the products of Knoll and Co., described in New and Nonofficial Remedies.

The Council has also recognized Merck and Co. as selling agent for Kelene.

Heyden Chemical Works: Betol: Having been advised by the Heyden Chemical Works that Betol is no longer offered for sale the Council voted that it be omitted from New and Nonofficial Remedies.

Since publication of New and Nonofficial Remedies, 1915, and in addition to those previously reported, the following articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion with New and Nonofficial Remedies.

Mercurialized Serum, Mulford.—A solution of mercuric chloride in normal horse serum diluted with physiologic sodium chloride solution. It is proposed for the treatment of syphilis, particularly the cerebrospinal type. It is supplied as:

Mercurialized Serum, Mulford, No. 1.—One 30 Cc. ampule containing the equivalent of 1.3 mg. (1/50 gr.) mercuric chloride with rubber tube and intraspinal needle.

Mercurialized Serum, Mulford, No. 2.—One 30 Cc. ampule containing the equivalent of 2.6 mg. (1/25 gr.) of mercuric chloride with rubber tube and intraspinal needle.

Mercurialized Serum, Mulford, No. 3.—A package of ten 30 Cc. ampules each containing the equivalent of 1.3 mg. (1/50 gr.) of mercuric chloride with rubber tube and intraspinal needle.

Mercurialized Serum, Mulford, No. 4.—A package of ten 30 Cc. ampules each representing 2.6 mg. (1/25 gr.) mercuric chloride with rubber tube and intraspinal needle.

Mercurialized Serum, Mulford, No. 5.—8 Cc. mercurialized serum, Mulford, containing the equivalent of 22 mg. (1/3 gr.) of mercuric chloride in a syringe graduated in fourths, with needle.

Mercurialized Serum, Mulford, No. 6.—A package of ten syringes, each containing 8 Cc. liquid which represents 22 mg. (1/3 gr.) of mercuric chloride. H. K. Mulford Company, Philadelphia, Pa. (Jour., A. M. A., Oct. 2, 1915, p. 1185.)

Radio-Rem, Outfit No. 4.—An apparatus designed for the production of radio-active drinking water by the action of radium sulphate contained in terra cotta plates. It consists of two plates contained in 250 Cc. bottles; when the bottles are filled with water the two plates impart about 1.8 microcurie (5000 Mache Units) to the water in twenty-four hours. For action, uses and dosage refer to the article on radium in New and Nonofficial Remedies. Schieffelin and Co., New York. (Jour A. M. A., Oct. 9, 1915, p. 1281.)

Histamine Hydrochloride.—The hydrochloride of the base beta-iminazolylethylamine (histamine). It is a valuable reagent for the standardization of pituitary preparations.

Imido, Roche.—A name applied to histamine hydrochlorid.

Ampules Imido, Roche.—Each ampule contains 1.1 Cc. of an aqueous 1 in 1000 solution of Imido, Roche (1 Cc. contains 1 mg.) Hoffmann-LaRoche Chemical Works, New York City. (Jour. A. M. A., Oct. 16, 1915, p. 1367.)

Betanaphthyl Salicylate.—The salicylic acid ester of beta-naphthol. It passes the stomach unchanged, but is split into its constituents in the intestinal tract. It

is believed to act as an intestinal antiseptic and to act in a similar way in the bladder. It is said to be useful in intestinal fermentation, catarrh of the bladder, rheumatism, etc. Mallinckrodt Chemical Works, St. Louis, Mo. (Jour. A. M. A., Oct. 30, 1915, p. 1553.)

Betol.—A name applied to Betanaphthyl salicylate (which see.) Merck and Co., New York. (Jour. A. M. A., Oct. 30, 1915, p. 1553.)

During November the following articles were accepted by the Council on Pharmacy and Chemistry for inclusion with New and Non-Official Remedies:

Antiseptic Supply Company: Iodoapplicators, iodoapplicators, special; iodosticks.

The Bayer Company, Inc.: Iodothyrine Tablets, 3 grs.; theocin-sodium-acetate tablets, 1½ grs.; thyresol pearls, 5 grs.

Merck & Co.: Agar agar powder, agar agar shreds, berberine hydrochloride, calcium peroxide, ethyl salicylate, flourescein, formic acid, mercury cyanide, mercury and potassium iodide, mercury succinimide, morphine meconate, osmic acid, sodium oleate, sodium peroxide, thiosinamine, urea, zinc peroxide (all Merck).

H. K. Mulford Company: Ampuls emetine hydrochloride, 0.005 gm.; ampuls emetine hydrochloride, 0.02 gm.; ampuls emetine hydrochloride, 0.04 gm.; ampuls mercury succinimide, 0.1 gm.; ampuls pituitary extract, ½ c.c.; ampuls quinine dihydrochloride, 0.24 gm.; ampuls quinine dihydrochloride, 0.5 gm.; ampuls quinine and urea hydrochloride, 1 per cent; ampuls sodium cacodylate, 0.1 gm.; ampuls sodium cacodylate, 0.2 gm.; ampuls sodium cacodylate, 0.5 gm.; ampuls sodium cacodylate, 1 gm.; purified tricresol, Mulford; scarlatinal tre pto-serobacterin (Therapeutic).

Powers-Weightman-Rosengarten Company: Calcium peroxide, magnesium peroxide, sodium perborate; sodium peroxide, strontium peroxide, zinc peroxide (all P. W. R.).

Swans-Myers Company: Swan's staphylococcus bacterin (No. 37), Swan's streptococcus bacterin (No. 43), Swan's typhoid bacterin (No. 44), (Prophylactic).

Since publication of New and Non-Official Remedies, 1915, and in addition to those previously reported, the following articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion with "New and Non-Official Remedies":

Bismuth Tribromphenate—Basic bismuth tribromphenate. It is claimed to be a non-irritant and non-toxic antiseptic and an odorless and efficient substitute for iodoform. It is said to be of value in gastro-intestinal catarrh, proctitis, dysentery, diarrheas, etc. Merck & Co., New York (*Jour. A. M. A.*, Nov. 13, 1915, p. 1731).

Butyl-Chloral Hydrate, Merck—A non-proprietary brand of butylchloral hydrate admitted to New and Non-Official Remedies. Merck & Co., New York (*Jour. A. M. A.*, Nov. 13, 1915, p. 1731).

Ethyl Bromide, Merck—A non-proprietary brand of ethyl bromide admitted to New and Non-Official Remedies. Merck & Co., New York.

Homatropine Hydrochloride, Merck—A non-proprietary brand of homatropine hydrochloride admitted to New and Non-Official Remedies. Merck & Co., New York.

Sodium Cacodylate, Merck—A non-proprietary brand of sodium cacodylate admitted to New and Non-Official Remedies. Merck & Co., New York.

Iodothyrine Tablets, 3 Grs.—Each tablet contains iodothyrine 3 grs. The Bayer Company, Inc., New York.

Thyresol Pearls, 5 Grs.—Each pearl contains thyresol 5 grs. The Bayer Company, Inc., New York.

Theocin-Sodium Acetate Tablets, 1½ Grs.—Each tablet contains theocin-sodium acetate, 0.1 gm. The Bayer Company, Inc., New York.

Ampuls Emetine Hydrochlorice, Mulford, 1/12 Gr.—Each ampule contains emetine hydrochloride, 0.005 gm. H. K. Mulford Company, Philadelphia.

Ampuls Emetine Hydrochloride, Mulford 1/3 Gr.—Each ampule contains emetine hydrochloride, 0.02 gm. H. K. Mulford Company, Philadelphia.

Ampuls Emetine Hydrochloride, Mulford 2/3 Grs.—Each ampule contains emetine hydrochloride, 0.04 gm. H. K. Mulford Company, Philadelphia.

Ampuls Sodium Cacodylate, Mulford, 1½ Grs.—Each ampule contains sodium cacodylate, 0.1 gm. H. K. Mulford Company, Philadelphia.

Ampuls Sodium Cacodylate, Mulford, 3 Grs.—Each ampule contains sodium cacodylate, 0.2 gm. H. K. Mulford Company, Philadelphia.

Ampuls Quinine and Urea Hydrochloride, 1 per cent, Mulford—Each ampule contains 5 c.c. of a sterile 1 per cent solution of quinine and urea hydrochloride. H. K. Mulford Company, Philadelphia.

Ampuls Mercury Succinimide, Mulford, 1/6 Gr.—Each ampule contains mercury succinimide, 0.01 gm. H. K. Mulford Company, Philadelphia.

Calcium Peroxide, P. W. R.—A non-proprietary preparation of calcium peroxide admitted to New and Non-Official Remedies. Powers-Weightman-Rosengarten Company, Philadelphia.

Magnesium Peroxide, P. W. R.—A non-proprietary preparation of magnesium peroxide admitted to New and Non-Official Remedies. Powers-Weightman-Rosengarten Company, Philadelphia.

Sodium Peroxide, P. W. R.—A non-proprietary preparation of sodium peroxide admitted to New and Non-Official Remedies. Powers-Weightman-Rosengarten Company, Philadelphia.

Strontium Peroxide, P. W. R.—A non-proprietary preparation of strontium peroxide admitted to New and Non-oOfficial Remedies. Powers-Weightman-Rosengarten Company, Philadelphia.

Zinc Peroxide, P. W. R.—A non-proprietary preparation of zinc peroxide admitted to New and Non-Official Remedies. Powers-Weightman-Rosengarten Company, Philadelphia.

Sodium Perborate, P. W. R.—A non-proprietary preparation of sodium perborate admitted to New and Non-Official Remedies. Powers-Weightman-Rosengarten Company, Philadelphia.

Formic Acid, Merck—A non-proprietary preparation of formic acid admitted to New and Non-Official Remedies. Merck & Co., New York.

Agar-Agar Powder, Merck—A non-proprietary preparation of agar-agar admitted to New and Non-Official Remedies. Merck & Co., New York.

Agar-Agar Shreds, Merck—A non-proprietary preparation of agar-agar admitted to New and Non-Official Remedies. Merck & Co., New York.

Berberine Hydrochloride, Merck—A non-proprietary preparation of berberine hydrochloride admitted to New and Non-Official Remedies. Merck & Co., New York.

Fluorescein, Merck—A non-proprietary preparation of fluorescein admitted to New and Non-Official Remedies. Merck & Co., New York.

Mercury Cyanide, Merck—A non-proprietary preparation of mercury cyanide admitted to New and Non-Official Remedies. Merck & Co., New York.

Mercury and Potassium Iodide, Merck—A non-proprietary preparation of potassium mercuric-iodide admitted to New and Non-Official Remedies. Merck & Co., New York.

Swan's Typhoid Bacterin (No. 44), (Prophylactic)—Marketed in packages of three 1 c.c. vials and also in packages of six 1 c.c. vials. Swan-Myers Company, Indianapolis, Ind. (*Jour. A. M. A.*, Nov. 27, 1915, p. 1915).

Book Notices

A Public Health Survey of Topeka, Part I. The Topeka Improvement Survey. A report by Franz Schneider, Jr., Sanitarian, Department of Survey and Exhibits, Russell Sage Foundation, New York City. To the Topeka Improvement Survey Committee, Topeka, Kansas, May, 1914.

An inquiry into social and living conditions in the city of Topeka made for the purpose of basing a program of community advance upon the facts of local problems. Under the direction of the Department of Surveys and Exhibits, Russell Sage Foundation.

A Survey of the Public Health Situation, Ithaca, New York, 1914. By Franz Schneider, Jr., Sanitarian, Department of Surveys and Exhibits, Russell Sage Foundation, New York City. Central Committee for Ithaca Survey, Ithaca, New York, 1915.

Public Health in Springfield, Ill. A Survey by the Department of Surveys and Exhibits, Russell Sage Foundation, Franz Schneider, Jr. The Springfield Survey, Public Health Section. Department of Surveys and Exhibits, Russell Sage Foundation, New York City, May, 1915. Price, 25 cents.

A Study made in the city of Springfield, Ill., for the purpose of improving social and living conditions. Instituted by the Springfield Survey Committee and conducted under the direction of the Department of Surveys and Exhibits, Russell Sage Foundation.

Your Baby—A Guide for Young Mothers. By Edith B. Lowry, M. D., author of "Herself," "The Home Nurse," etc. Chicago, Forbes & Co., 1915.

This little book was written for the benefit of young mothers, and has much information for them, written in a way they may read understandingly. It will do a great deal toward eliminating from the mind of expectant mothers much of "rubbish" they have gained from reading quack medical advertisements and like literature. It discusses briefly many of the erroneous impressions held by many women relative to child bearing.

Annual Report of the Surgeon General of the Public Health Service of the United States, for the Fiscal Year 1915. Washington Government Printing Office, 1915.

Thirty-Eighth Annual Report of the Board of Health of the State of New Jersey, 1914, and Report of the Bureau of Vital Statistics. Paterson, N. J., News Printing Company, State Printers, 1915.

Smoke Abatement and Electrification of Railway Terminals in Chicago. Report of The Association of Commerce Committee of Investigation on Smoke Abatement and Electrification of Railway Terminals. W. F. M. Goss, Chief Engineer. Chicago, 1915. Rand-McNally & Company, 538 South Clark Street, Chicago, Distributing Agents of the Committee. Price per copy, $6.00.

Laboratory Methods, with special reference to the needs of the General Practitioner, by B. G. R. Williams, M. D., and E. S. C. Williams, with an introduction by Victor C. Vaughan, M. D., L. L. D. Third edition, illustrated, with 43 engravings. St. Louis, C. V. Mosby Co., 1915. Price, $2.50.

An exceedingly valuable book of laboratory methods for use, as stated, by the general practitioner. All the most commonly used tests are simply described, enabling the physician to perform practically all his own laboratory work in his office. It is not intended for laboratory workers.

Diseases of the Skin, by Henry H. Hazen, A. B., M. D., Professor of Dermatology in the Medical Department of Georgetown University; Professor of Dermatology in the Medical Department of Howard University; Sometime Assistant in Dermatology in the Johns Hopkins University; Member of the American Dermatological Association. 233 Illustrations, including 4 color plates. St. Louis, C. V. Mosby Co., 1915. Price ——.

A new work on diseases of the skin, presented with special reference to the practicing physician. It fills the gap between the very brief and the larger works on diseases of the skin. Nothing special is to be noted, except the endeavor, in which the author has succeeded, of producing a book that is most suitable for student and general practitioner.

The illustrations are good and the bibliography is extensive enough for most purposes.